









## REGULATIONS



**UNIVERSITY OF CALCUTTA**

**REGULATIONS**

**With amendments up to  
April, 1927**



**Calcutta**

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## GOVERNMENT OF INDIA

## HOME DEPARTMENT

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### EDUCATION

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**No..600**

*Extract from the Proceedings of the Government of India in the Home Department—under date Simla, the 11th August, 1906.*

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### RESOLUTION

Read—

A letter dated 9th July, 1906, from the Committee of the Senate of the Calcutta University, submitting, for the sanction of the Government, a complete body of draft regulations to provide for all matters relating to the University.

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By the provisions of section 26 of the Indian Universities Act, 1904, the Senate of the Calcutta University are required to cause a revised body of regulations, providing for all matters relating to the University, to be prepared and submitted for the sanction of the Government of India within one year after the commencement of the Act. This period of one year expired on the 1st September, 1905. In exercise of the powers conferred by section 26 (1) of the Act the Government of India, at the request of the Senate, then fixed a further period of six months for the submission of revised regulations. When this period was nearing its close, the Government of India were advised by the Hon'ble the Advocate General that it was not within their power to extend the time further, and that, in the event of a revised body of regulations not being submitted by the Senate before the end of February, 1906, such regulations could only be made

by the Government under the powers vested in them by section 26 (2) of the Act.

2. It proved impossible for so large a body as the Senate to complete their revision of the regulations within the time fixed and the legal authority to frame regulations thus passed out of their hands and devolved upon the Government of India. The Governor-General in Council was, however, anxious to avail himself as far as possible of the assistance of the Senate in the matter and to utilise the ample materials furnished by them, as a basis for the completion of the work. They were accordingly informed that the Government of India would be glad to receive from them any draft regulations or suggestions in regard to the regulations, which that body might be prepared to submit by the middle of April, 1906, and to give to these full consideration.

3. In order to ensure that the best use should be made of the materials which the labours of the Senate had provided, the Government of India decided to appoint a small Committee, consisting of members of the Senate representing the various interests concerned and, more especially the interests of private colleges in order to assist them in preparing the regulations. Their object in adopting this course was to give the Senate, by such representation, virtually as large a share in the settlement of the regulations as they would have enjoyed had they been able to comply with the provisions of section 26 (1) of the Act. The Committee was constituted as follows:—

*President*—The Hon'ble Mr. Justice Asutosh Mookerjee,  
Vice-Chancellor of the Calcutta University.

*Members*—Mr. G. W. Küchler, Indian Educational Service.  
Rev. A. B. Wann, Principal, General Assembly's  
Institution.

Mr. N. N. Ghose, Principal, Metropolitan Institution.

Babu Brajendranath Sil, Principal, Victoria College, Cooch-Behar.

Dr. E. Denison Ross, Officer in charge of the Records of the Government of India, and late Principal of the Calcutta Madrasah.

The duties of Secretary were performed by Dr. Ross. The Committee were supplied with copies of the drafts submitted by the Senate, and instructions were conveyed to them regarding the principles to be observed in framing the revised regulations. A copy of these instructions is annexed.

4. The distinguished academic attainments of the members of the Committee, the wide range of their experience of Indian education, their personal connexion with the chief interests

involved, and their intimate acquaintance with the working of the Calcutta University and with the previous discussions regarding the revision of the regulations, afford the best guarantee of their ability to represent the Senate for the purpose of preparing the final draft, and give great weight to the unanimous conclusions at which they have arrived. Their deliberations, which were based upon the draft regulations prepared by the Senate of the University, commenced on the 9th May and were concluded on the 9th July. During that time they held fifty meetings and the result of their labours has been laid before the Governor-General in Council in the shape of a complete body of regulations, divided into fifty-four chapters and dealing in ample detail with all matters relating to the University of Calcutta. The Government of India, having examined these regulations with the care and attention due to the far-reaching issues which they raise, see no reason for introducing any additions or alterations; and they now accord formal sanction to them in the precise form in which they left the hands of the Committee.

5. In promulgating the regulations for the future government of the University, the Government of India think it advisable to draw attention to the principal chapters and to explain the intention and effect of some of the more important provisions.

6. The first chapter deals with the transaction of business by the Senate, and seeks to guard against any decision being arrived at without adequate notice and full discussion. Regulation 4 follows the existing bye-laws in providing that no question shall be brought before the Senate which has not been fully considered by the Syndicate. Regulations 63-65 lay down elaborate rules for elections, and Regulation 66 enables a minority to give formal expression to its views. Regulation 67 contains a provision, which experience has shown to be desirable, for giving a reasonable degree of finality to the decisions of the Senate.

7. Chapter III introduces several important changes in respect of Faculties of the University. It creates a new Faculty devoted to Science, and it lays down that a member of the Senate need not necessarily belong to any Faculty, and that members who are competent to advise in more than one department of learning should be placed on two Faculties but not on more than two. The Committee have also framed rules for the appointment of Faculties, and care has been taken that the Senate shall have an effective voice in the matter. Regulations 5 and 6 deal with the important question of expanding the Faculties under section 14, sub-section (2), clause (b) of the Indian Universities Act, by the admission of qualified persons, who are not Fellows, to take part in the working of the University.

8. In Chapter IV, which treats of the Syndicate, the most important feature is that that body will be elected partly by the Senate and partly by the Faculties. This departure from the existing practice is justified by two considerations. In the first place, the Syndicate is the executive committee of the Senate, and the Senate as a body, ought to have some voice in its appointment. In the second place, the proposed system will enable the Senate, after the elections have been made by the Faculties, to secure the representation on the Syndicate of particular academic studies or interests. The powers and duties of the Syndicate are fully defined in this chapter, and include the important power of granting or withdrawing the recognition of schools by the University.

9. Chapter VII provides for a whole-time Registrar who will be appointed for five years and will be eligible for re-appointment upon the expiry of the first term. He must be a graduate of position with experience of University affairs. The salary (Rs. 800—50—1,000) and the leave and pension rules will, it is hoped, enable the University to secure the services of a competent officer for this important post. Chapter VIII creates the new appointment of an Inspector of Colleges. Unless the University has a permanent Inspector of its own, the work of inspecting colleges must be done by members of the Senate who volunteer for the purpose or by officials lent by Government. Under such a system the inspecting authority may vary from year to year, and there can be no continuity in the standard of efficiency applied. The regulations provide that the Inspector shall be a person of high academic standing and possessing some experience of Indian colleges. Chapter X empowers the Senate, on the recommendation of the Syndicate, to appoint University Readers, who will be, in effect, temporary professors appointed to deliver courses of lectures on special subjects. They will be appointed for one year and the lectures delivered will be mainly for the benefit of graduates engaged in research work. It is hoped that both English and Indian scholars of distinction may be induced to undertake courses of this kind. Chapter XI contemplates the appointment of University Lecturers who will be for the most part professors in affiliated colleges or experts otherwise employed. The objects of the lectures will be to carry on post-graduate teaching. There are many colleges in Bengal which, though unable to undertake a complete course of lectures in an advanced subject, might be able to spare one or two members of their staff to lecture on a portion of such a course, so that the ground would be completely covered by two or more professors belonging to different colleges.

10. Chapter XII treats of the election of Fellows by Faculties under the provisions of section 9 of the Indian

Universities Act. The regulations prescribe the method of election and empower the Senate to hold a new election in cases of dispute. Chapter XIII relates to the election of Fellows by Registered Graduates under the provisions of section 7 of the Act, and confers a similar power on the Syndicate. Chapter XIV deals with the register of graduates to be kept under section 7, sub-section (2), of the Indian Universities Act. Graduates thus registered will have, in addition to the right of electing Fellows, the other substantial privileges enumerated in Regulation 8, including the use of the University Library on special terms, free admission to University lectures, and a copy of the University Calendar.

11. Chapter XV introduces, for the first time in the case of the Calcutta University, a register of University students in which the name of every student must be entered on first joining a college. If he is subsequently transferred from that college to another college, or if his name is removed from the college books for a breach of discipline or any other reason, or if under Chapter XXIII, Regulation 36, he is found guilty of gross misconduct, the fact will be noted in the register. Passes and failures at different examinations will be similarly noted. The register will thus furnish a continuous history of every student from the moment he enters the University to the time when he leaves. It will supply the college authorities with a correct account of the antecedents and career of every student with whom they are concerned, and it will place at the disposal of the University a valuable educational record.

12. In regard to non-collegiate or private students, Chapter XVI of the regulations provides that, except in very special cases, no person shall be admitted as non-collegiate student to any examination other than the Matriculation. The point of chief importance is that no person will, except in very special cases, be treated as a non-collegiate student who has been in any college whether affiliated or un-affiliated within a year of the Examination. This gives effect to the suggestion contained in paragraph 7 of the letter of instructions to the Committee. Three other regulations of this Chapter involve important principles. Regulation 4 prohibits the admission of a private student to an examination in a scientific subject unless he has received practical training in a laboratory. It thus affirms the sound principle that the study of science has no educational value unless it is accompanied by experimental and practical work. Regulation 5 provides that no non-collegiate student shall be admitted to an examination as a teacher who has not been engaged in teaching for at least three years. The object is to prevent persons who have failed at an examination from taking nominal employment as school teachers and thus gaining admission to an examination without attending lectures in a college. This practice is detrimental both to

their own studies and to the quality of the teaching in the schools which employ them.

13. Chapter XVIII dealing with the affiliation of colleges is based on section 21 of the Indian Universities Act to which it adds certain important conditions. The first of these is that the governing body required by the Act should comprise some representatives of the teaching staff. In the second place, the regulations provide that regard should be had to the character of the teachers and to the conditions governing their appointment. Thirdly, they lay down that, except with the special permission of the Syndicate (which can be granted only on specified grounds), no college lecturer is to have a class of more than 150 pupils. Under the existing system no limit is fixed, and great overcrowding is tolerated, with the result that the classes in some colleges contain as many as 250 pupils, a state of affairs injurious both to instruction and discipline. The Syndicate is empowered to make an exception to the rule in the case of special subjects or special professors.

14. It has been universally recognised that if higher education is to attain its full development, the existing colleges must not be excluded from the benefits of the reforming movement. The best means of enabling these institutions to adapt themselves to improved conditions is a problem of great difficulty and delicacy; and the Governor-General in Council believes that Chapter XIX has been so framed as to secure that continuous progress shall be made in the right direction without setting up an ideal standard which may not be at once attainable. Its provisions are, indeed, the necessary consequence of the change in the character and scope of affiliation which is effected by Chapter XVIII, Regulation 1. It has hitherto been the practice to grant affiliation in general terms up to a particular degree, such as the B.A., although many of the colleges thus affiliated are incapable of teaching all the subjects included in the B.A. course. Following the recommendation made in paragraph 69 of the Report of the Indian Universities Commission that "affiliation should be granted, and from time to time renewed, not in general terms, but with a more exact reference to the subjects and courses of study for which the college can make adequate provision," the new regulations lay down that affiliation shall be given specifically for each separate subject and each separate standard in each of the Faculties. They require, in short, that colleges shall be affiliated in what they can teach and not in what they cannot teach; a self-evident proposition which involves nothing more than the recognition of actual facts, and the renewal of affiliation in accordance with them. Regulation 7 of Chapter XIX provides for the application of this principle to existing colleges at the end of two years, and thus gives ample time to every college to complete

its arrangements for imparting instruction in certain subjects and standards. The renewal of affiliation on these terms will affect all colleges alike, since no college is equipped to teach every subject included in the course for a particular degree. The question of the extent to which affiliation should be renewed will be dealt with in the first instance by the Senate and Syndicate two years hence, and the ultimate decision will rest with the Government of India who will give the fullest consideration to the circumstances of each case and to the causes which may have precluded particular colleges from complying with the requirements of the Syndicate within the period prescribed. Chapter XX, which may be regarded as supplemental to Chapters XVIII and XIX provides for systematic inspection by a salaried Inspector and one or two other experts who may be appointed from time to time by the Syndicate to assist in the inspection of a particular college, or of a specified group of colleges.

15. Chapter XXI which treats of the recognition of schools, is practically identical with the draft submitted by the Senate which is understood to represent the unanimous opinion of the Fellows belonging to the Education Department in Bengal. It gives effect to the principle, enunciated by the Government of India in the Home-Department letter of 24th October, 1902, reviewing the report of the Universities Commission, and reaffirmed in the instructions given to the Committee, that no school should be recognised by the University for the purpose of sending up pupils as candidates for the Matriculation Examination unless the Syndicate is satisfied, upon the report of the Director of Public Instruction or of an Inspector of Government Schools, or of some other competent person nominated in this behalf by the Syndicate, that the school conforms with regulations to be made by the Senate for the purpose. Under the regulations now sanctioned the recognition or non-recognition of a school will be the act of the University, and the functions of the Education Department or of the person nominated by the Syndicate to report on the claims of the school to recognition will be limited to placing before the University the information requisite to enable it to exercise its controlling authority. This solution of a question which is not altogether free from difficulty is indicated alike by the cordial relations which have existed between the University and the Education Department in the past, by their active co-operation in the supervision of a secondary education, and by the existence in Bengal and the new Province of a large number of private schools which receive no aid from Government, and which therefore are not inspected by the officers of the Education Department. With such schools the University alone is legally competent to deal and the Governor-General in Council is assured



that its influence will be firmly and discreetly exercised in the direction of checking the spirit of licence and self-assertion, the unbecoming manners, the impatience of control, and the disregard of all authority which have been displayed of late by the boys and masters of not a few schools in Bengal and the new Province. For both boys and masters the same excuse may be pleaded—imperfect methods of education which train the memory at the expense of the higher faculties and leave the judgment immature and the character undeveloped and unstable. It now rests with the University to correct these grave defects in the rising generation of students and to grapple with evils which, if allowed to continue, are bound to react injuriously upon the moral and intellectual progress of the race.

The conditions of recognition comprised in Chapters XXI and XXII require satisfactory proof to be given that a new school is actually wanted, and that its efficiency and stability are reasonably guaranteed. The other points mentioned in the letter of instructions are also amply provided for in the regulations. The only provision to which special attention need be drawn is that embodied in Chapter XXI, Regulation 2, and Chapter XXII, Regulation 5, which limits the number of students in each class. It is understood that this was adopted by the Senate without a dissentient voice. There can be no reasonable doubt that over-crowding in the lower classes of schools is largely answerable for the unsatisfactory training of Indian boys. If it is essential in all countries that young students in the beginning of their career should have individual attention paid to them as far as possible, it is especially so in India where knowledge has to be acquired through the medium of a difficult foreign tongue. If a boy is one of a class of 60 or 70 when he is first learning English, it is not surprising that his grammar, idiom, spelling and pronunciation should be bad; the wonder is that he learns even as much as he actually does. The regulations, following the unanimous recommendation of the Senate, remove the chief cause of these deficiencies by prescribing the maximum number of boys that may be taught in any class.

16. Chapter XXIII comprises regulations for the admission, transfer and withdrawal of students from affiliated colleges, the object of which is to maintain continuity of studies and to prevent capricious changes from college to college. Certain exceptional cases, where a transfer in the middle of a term is rendered necessary by the state of a student's health or by a change of residence on the part of his parent or guardian, are provided for in Regulation 14. The Governor-General in Council believes that these regulations will be welcome both to principals of colleges and to the parents of students. Regulation 38 lays down that questions arising in connection with these regulations shall be decided by a special Committee of the

Senate called the Transfer Committee. The proceedings of this Committee will be operative only if confirmed by the Syndicate, because under the Act the executive government of the University is vested in the Syndicate which is consequently responsible for the due observance and enforcement of the regulations. The provisions contained in this Chapter derive great authority from the fact that the Committee had among their number no less than four experienced principals of Colleges.

17. The problem of the residence of students, which is dealt with in Chapter XXIV, is admittedly one of great difficulty. It has given rise, and is likely to give rise for some time to come, to the widest divergence of opinion. The regulations framed by the Committee are in strict accordance with the Act. They go somewhat beyond the recommendations of the Senate, who, owing to the nature of the subject, and the differences of opinion among their body, were only able to submit an incomplete set of regulations. The Chapter provides for the residence of students under the following heads:—(1) Students residing with their parents and guardians. (2) Students residing in—(a) Collegiate Hostels, being boarding houses which form part of a college, admit only the students of that college and are under the control of its Principal; (b) Non-Collegiate Hostels, or boarding houses kept by private individuals and not forming part of a college; (c) Attached messes, or chummeries, all the members of which belong to the same college; (d) Unattached messes, being similar chummeries, the members of which belong to different colleges; (e) Private lodgings approved by the authorities of the college in which the student is reading. The necessity for recognising these last arises from the fact that even now many Hindu students are married at the age of 17 or 18 and have their wives and families with them in Calcutta. •

For the purpose of administering the regulations relating to non-collegiate hostels, messes and private lodgings, provision is made for the appointment of a Committee of the Senate to be called "the Students' Residence Committee." Not less than three members of the Committee must be Indians. This is important, as the work of the Committee will be one of great difficulty and delicacy, and they will have to decide questions affecting the mode of life and the manners and social customs of Indian students. The whole subject is still in the experimental stage, and the regulations now sanctioned probably cannot be regarded as final. They embody, however, the experience of four members of the Committee who have conducted large hostels for several years, and the Government of India believe them to be as thorough and as practicable as it is possible to make them at present.

18. In Chapter XXV, which contains general rules for examinations, an attempt is made to discourage that style of teaching whose sole aim and object is the passing of examinations; and elaborate rules are laid down for the setting of papers, methods of examining, appointment of examiners and other analogous matters. In future, every examination paper will be, wherever possible, the joint work of three examiners, and it is hoped that this will result in the questions set being a really fair test of the students' knowledge. In order to gauge the students' grasp of his subject, as distinguished from his acquaintance with the contents of a particular book, the questions will no longer be confined to the books recommended, which are to be taken as indicating merely the standard and extent of knowledge required in the subject defined by the syllabus.

19. Chapter XXVI treats of the general conditions of study in affiliated colleges. Here the regulations prescribe the minimum number of lectures to be delivered in each subject and follow the recommendation of a majority of the Senate in requiring every collegiate student to attend at least three-fourths of the lectures delivered in the college to which he belongs. Chapter XXVII lays down certain special conditions to be fulfilled by colleges which seek affiliation in a scientific subject. In section 21, sub-section (1), clause (c), of the Indian Universities Act, it is provided that where affiliation is sought in any branch of experimental science, arrangements must be made, in conformity with the regulations, for imparting instruction in that branch of science in a properly equipped laboratory or museum. The regulations contained in this chapter prescribe a minimum standard for each of the experimental sciences included in the curriculum for Degrees in Arts and Science. They provide, among other things, for the minimum size of the laboratory, and for the maximum number of students who may be taught by a single demonstrator. In Appendix B admirably full specifications are given of the equipment of laboratories, and the approximate cost. The information contained in this Chapter and its Appendix is based upon expert opinion and will be of the utmost value to colleges seeking affiliation in experimental science under the terms of the Act.

20. Chapter XXIX prescribes the mode of transition from the old to the new regulations. While enforcing the earliest possible introduction of the new regulations it allows ample time for the existing schools and colleges to adapt their staff and equipment to the new condition of things and to train their students in accordance with the principles enunciated in the regulations. It is believed that all possible cases have been provided for, but power has been reserved to the Syndicate to give special directions in contingencies not covered by the regulations.

21. Chapter XXX, dealing with the Matriculation Examination, is the first of a series of 24 chapters comprising the regulations for the various examinations, in the different Faculties. Its main object is to secure that every candidate who matriculates will be likely to profit by more advanced studies. If greater thoroughness is to be demanded, the course must be simplified. If too many subjects are prescribed, all of them will be indifferently learnt. The regulations therefore proceed on the principle that whatever subject is required of a candidate must be known thoroughly up to an appropriate standard. In English, for example, they dispense with regular text books but provide that a number of books will be recommended in order to indicate the standard up to which candidates will be expected to have read. The examination will be held not in a prescribed portion of English literature, but in the English language, as used in daily life. It will be a test of the ability of candidates to write clear, simple and correct English, and of their intelligent comprehension of modern English applied to familiar subjects. The memory will be less heavily burdened than under the present system and there will be greater scope for the exercise of general intelligence. Similar principles are applied to the courses in mathematics and in the classical languages. In making the candidate's own vernacular compulsory for Matriculation, the Committee have adopted the unanimous recommendation of the Indian Universities Commission. For candidates whose vernacular is not one of those recognised, an alternative paper will be allowed in English composition, French or German.

English History has been reserved for the Intermediate Examination in Arts; and this reduction of the course has rendered it possible to require in addition to the History of India, some knowledge of the present administration of British India and of the progress of India under British rule. This subject will be treated in a text book to be prepared by the University. Candidates who take up History will be allowed to submit their answers in English or in their own vernacular. This will enable the student to read the History of India in his mother tongue, and will render the study both more attractive and more profitable. At the Matriculation stage students do not know English well enough to be able to read history in that language with advantage and are tempted to have recourse to keys and summaries of leading events, which admit of being committed to memory, but which fail to arouse any intelligent interest in the subject.

The pass standard for the Matriculation Examination is defined in the regulations, which require that in order to pass in English, a candidate must obtain 40 per cent. of the full marks assigned to the two papers in English; or if he can get 40 per cent. in the first paper (translation and essay) then 36 per

cent. of the full marks of the two papers. In order to pass in the vernacular, a candidate must obtain 36 per cent. and in order to pass in compulsory Classics and Mathematics, 30 per cent. in each, and of the aggregate marks of all the papers, 36 per cent. This means that if a candidate gets less than 36 per cent. of the full marks in any subject he has to make up for the deficiency by getting more than 36 per cent. in some other subject.

These changes are the outcome of much discussion among the most competent authorities, and they represent a compromise between the extreme views of some who would prematurely raise the standard to an ideal height and others who are influenced by an excessive solicitude for the backward student. They may therefore be expected to satisfy those who have at heart the best interests of higher education. Their intention is not to set the scholar a harder task, but to eliminate unsound methods of teaching and to gauge the student's knowledge by a more reasonable test. Now that the age for Matriculation has been raised to 16, candidates will be on the average about a year older when they come up for Matriculation than has hitherto been the case and will therefore be qualified to stand a more thorough test in English. For the purpose of acquiring a colloquial knowledge of a language every additional year of study is of great value, and the new system recognises this by laying less stress on mere book work.

22. Chapter XXXI treats of the Intermediate Examination in Arts. After a student has matriculated, he is allowed to proceed either to a degree in Arts or a degree in Science. The Committee have decided that the Intermediate Examination for Arts students cannot be in all respects identical with the Intermediate Examination for Science students. If a proper standard is to be maintained at the examination for Bachelor of Science, it is essential that the student should begin in some measure to specialise in scientific subjects at the Intermediate stage. This cannot be secured if Science students are burdened at that stage with a large number of literary subjects. At the same time it will be observed that a certain amount of purely literary training is also prescribed for them. The principle of bifurcation at the Intermediate stage is supported by the precedent of the University of London.

23. Chapter XXXII defines the examination for the Degree of Bachelor of Arts. The principal changes which are made by the regulations are: (1) composition in the vernacular is obligatory on all candidates, as was recommended by the Universities Commission; (2) candidates are given a greater choice of subjects; (3) Political Economy is treated as a separate subject and not as an adjunct to the course in History; (4) every candidate will have to take up English and vernacular composition

and two other subjects at his choice, one of which may be a scientific subject. The different courses have been equalised in point of difficulty as far as practicable.

24. The changes introduced in the examination for the Degree of Master of Arts by Chapter XXXIII are in accordance with the recommendations of the Senate, and they are of fundamental importance. Under the old regulations, any Bachelor of Arts may proceed to the M.A. Degree immediately after graduation. In general, he does so after the lapse of a year. Under the new regulations a minimum interval of two years must elapse between the taking of the Bachelor's Degree and the Master's Degree. The object of this is to secure adequate courses for the M.A. Degree. Again under the old regulations, a candidate for the M.A. Degree who received a training in a college is placed on the same footing as a candidate who appeared as a private student. This is obviously undesirable if candidates are to be encouraged to avail themselves of the benefits of the post-graduate teaching. Non-collegiate students, however, are not debarred from appearing at the M.A. Examination, but they cannot do so until three years after graduating. Chapter XXXIV institutes a new Degree, that of Doctor of Philosophy, which will be obtainable only by research. It will be open to all Masters of Arts of at least three years' standing. •

25. Chapter XXXV deals with the Intermediate Examination in Science, and is the first of four chapters treating of different examinations in the Faculty of Science. The Intermediate Examination in Science is not an examination in scientific subjects alone. It is felt that it would not be to the real advantage of the students to be deprived of all literary training at so early a stage of their University career; the examination, therefore, will be partly literary and partly scientific. Every candidate will be examined in the English language and literature and in Vernacular Composition up to the standard prescribed for the Intermediate Examination in Arts.

26. The examination for the Degree of Bachelor of Science (Chapter XXXVI) will be in scientific subjects alone, on the mode of the course prescribed by the University of London. A candidate is given his choice of three subjects out of eight, but he may not take up Mathematics for the first time at this stage, nor can he offer either Physics or Chemistry unless he has taken up both Mathematics and Physics at the Intermediate Examination. In each subject there is a Pass Course as well as an Honours Course; and in all subjects other than Mathematics, there will be a searching practical examination, candidates being required to pass separately in the theoretical and practical portions. The syllabuses in all the subjects are comprehensive and the test applied will conform to the most approved modern standards.

The standard for a Pass and for Honours is similar to that prescribed for the B.A. Examination.

27. Chapter XXXIX treats of the examinations for a Licentiate in Teaching and Chapter XL deals with the Degree of Bachelor of Teaching. These Chapters, which are based on the recommendations of the Indian Universities Commission, are a new departure so far as the Calcutta University is concerned. There are to be two examinations. The first of these, namely, the examination for the Licentiate, will be open to all persons who have passed the Intermediate Examination in Arts or Science. These candidates will be examined not only in the theory, practice and methods of teaching, but also in a course of modern English up to the standard of the B.A. degree. The second is the examination for the Degree of Bachelor of Teaching, which will be open to all persons who have graduated in Arts, or Science. These candidates will be examined in the theory, practice and methods of teaching and in the history of educational ideas and methods. The examinations will be both theoretical and practical, and the regulations require students to have attended a course of lectures on the theory of teaching in a College affiliated for the purpose. Although no such College exists at present, the immediate introduction of these examinations is justified on the ground that any candidate who prepares himself seriously for them will, even without undergoing a regular course of lectures on the subject, make a more efficient teacher than one who has not studied teaching at all. No candidate will, however, be admitted, unless he has either undergone a course of practical training in one of the existing training schools, or has served as a teacher in one of the schools, recognised by the University. It may be anticipated that these two examinations in teaching will serve a useful purpose and will become very popular. After a sufficient number of persons have passed them it may be advisable for the University to rule that no school will be permitted to prepare candidates for the Matriculation Examination which has not on its staff one or more certificated teachers. Such teachers will doubtless be in great demand, and it may confidently be expected that they will regard education in the light of a serious profession to which they may properly devote their lives.

28. Chapter XLI which defines the examination for the Degree of Bachelor of Law introduces several important reforms. In the first place, the examination for the Bachelor's Degree has been divided into two parts, of which the preliminary part may be taken at the end of the first year of Law study after graduation in Arts or Science; while the final part may be taken one year after the preliminary examination has been passed. This will tend to encourage continuous study of the

subject. The minimum number of lectures to be delivered in each subject has been defined, and the example of American Universities has been followed in requiring students to attend a class for the discussion of legal questions, and in laying down that in every paper (other than the papers on Jurisprudence and Roman Law) a certain proportion of the marks shall be allotted to problems.

29. Chapter XLIV to XLVI of the Regulations are occupied with the three examinations leading up to the Degree of Bachelor of Medicine. Regarding the duration of this course there has been great difference of opinion and several conflicting considerations had to be borne in mind. On the one side it is urged that before a medical student can be regarded as qualified to practise his profession he must have devoted (1) an entire year to acquiring an adequate knowledge of the preliminary scientific subjects of Inorganic Chemistry, Botany, Physics and Zoology; (2) two years to the study of Anatomy and Physiology; (3) at least three years to practical work in Medicine and Surgery in a recognised hospital. If it is accepted, on the authority of expert opinion, that these periods cannot be reduced without sacrificing professional efficiency, it follows that the medical course must extend over six years from the time when the student's general education has reached the point at which it is possible for him to enter with advantage upon his technical studies. Hitherto he has been held to have reached this point on passing the First Examination in Arts, for this was considered the earliest stage at which he could have a sufficient command of English to enable him to follow lectures delivered in that language. Assuming this condition to be maintained, it is argued on the other side that the introduction of a six years' course for the degree of Bachelor of Medicine would bear hardly upon the student, since it would defer the time at which he could begin to practise his profession, and might look forward to earning a living, until the age of 24 or even later. The argument merits serious consideration, and its weight was recognised by the Senate who recommended the retention of the five years' course. In their anxiety, however, to render this course as efficient as possible they overloaded it with such a multiplicity of subjects and lectures that their scheme of study could not by any possibility be compressed into the time allotted to it. Their proposals were open to the further objection that they did not allow a candidate who had passed the Intermediate Examination in Science that relief from purely scientific studies to which he would be legitimately entitled.

30. The Committee were thus called upon to reconcile the modern demand for a high standard of professional efficiency with the reasonable plea, advanced on behalf of the students, that they should not be unduly delayed in entering upon the



work of their lives. This they have done by providing (1) that students who have passed the Matriculation Examination shall be permitted, as is the practice in the University of London, to proceed at once to a Medical degree; (2) that for such students the period of study shall be six years; (3) that the period shall be reduced by one year in the case of students who have passed the Intermediate Examination in Science before taking up the Medical course. The practical effect will be, that if a student passes his Matriculation Examination at the age of sixteen, he will be able to engage in the pursuit of his profession when he is twenty-two, or a year earlier than is now ordinarily possible. If, however, he postpones his decision to embrace a medical career until after he has passed the Intermediate Examination in Science, he cannot begin to practise until he is twenty-three.

31. The settlement of this vexed question arrived at by the Committee was indicated by the reforms which they had introduced in the Matriculation Examination. The standard now prescribed at this stage is in no way less advanced than that of the Preliminary Examination which the General Council of Medical Education of the United Kingdom requires candidates to pass before they can be registered as medical students. It demands in effect from the students a sound practical knowledge of the English language and may therefore be expected to enable them to follow the lectures of their Professors with less difficulty than is now the case even with those who have passed the First Examination in Arts. If this hope is realised, there is no reason why a student should not enter upon his medical studies immediately after Matriculation.

32. Such in outline are the principal features of the regulations which were framed in the first instance by the Senate and have subsequently been recast and expanded in various directions by a Committee of experts in close touch with the varied social life of the University and representing a wide range of learning and experience. The promulgation of these regulations marks a notable advance in the movement for the extension and progressive development of the higher forms of education which was initiated by the Universities Commission. Yet the stage thus reached is merely the starting point of a gradual process of re-construction, which will make large demands upon the energy and wisdom of the University authorities during the present generation of academic life. The regulations now sanctioned fill in the frame-work supplied by the Universities Act; they provide the machinery for reform; but they leave it to the Senate to put the machinery in motion and to determine the speed at which it shall be worked. With them it will rest to secure by a judicious exercise of their influence and authority, the general adoption of sound principles of education, and to spread abroad a true conception of the

value and uses of knowledge. Where the interests affected are so numerous, and the problems still unsolved so complex, no hasty or premature action need be apprehended. The advancement of learning, the promotion of research, the fostering of collegiate life, and the encouragement of individual effort are the objects at which the University will aim, and the Government of India are confident that in working towards these ends the Senate will be supported by the loyal and hearty co-operation of all colleges and schools within their jurisdiction. In conclusion the Governor-General in Council desire to tender his cordial thanks to the Vice-Chancellor and the Committee for the ability, industry, and judgment with which they have discharged the arduous and responsible task imposed upon them.

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ORDER—Ordered that this Resolution be published in the Supplement to the *Gazette of India*.

[ True extract.]

H. H. RISLEY.

*Secretary to the Government of India.*



# I

## ACT OF INCORPORATION

ACT NO. II OF 1857

Passed on the 24th January, 1857

AS AMENDED BY ACT NO. XII OF 1876, ACT NO. VIII OF  
1904, ACT NO. XI OF 1911 AND ACT NO. VII OF 1921.

*An Act to establish and incorporate an University at Calcutta.*

WHEREAS, for the better encouragement of Her Majesty's subjects of all classes and denominations within the Presidency of Fort William in Bengal and other parts of India in the pursuit of a regular and liberal course of education, it has been determined to establish an University at Calcutta for the purpose of ascertaining, by means of examination, the persons who have acquired proficiency in different branches of Literature, Science, and Art, and of rewarding them by Academical Degrees as evidence of their respective attainments, and marks of honour proportioned thereunto; and whereas, for effectuating the purposes aforesaid, it is expedient that such University should be incorporated: It is enacted as follows:—

Incorporation. I. The following persons, namely,

The Right Honourable CHARLES JOHN VISCOUNT CANNING,  
Governor-General of India.

The Honourable JOHN RUSSELL COLVIN,  
Lieutenant-Governor of the North-Western Provinces.

The Honourable FREDERICK JAMES HALLIDAY,  
Lieutenant-Governor of Bengal.

The Honourable SIR JAMES WILLIAM COLVILLE, Knight,  
Chief Justice of the Supreme Court of Judicature in Bengal.

The Right Reverend DANIEL WILSON, Doctor of Divinity,  
Bishop of Calcutta.

The Honourable GEORGE ANSON, General,  
Commander-in-Chief of the Forces in India.

The Honourable JOSEPH ALEXANDER DORIN,  
Member of the Supreme Council of India.

The Honourable JOHN LOW, Major-General,  
Companion of the Most Honourable Order of the Bath,  
Member of the Supreme Council of India.

The Honourable JOHN PETER GRANT,  
Member of the Supreme Council of India.

The Honourable BARNES PEACOCK,  
Member of the Supreme Council of India.

CHARLES ALLEN, Esquire,  
Member of the Legislative Council of India.

HENRY RICKETIS, Esquire,  
Provisional Member of the Supreme Council of India.

CHARLES BINNY TREVOR, Esquire,  
Judge of the Sudder Court of India.

Prince GHOLAM MUHAMMAD.  
WILLIAM RITCHIE, Advocate-General in Bengal.

CECIL BEADON, Esquire,  
Secretary to the Government of India.  
Colonel HENRY GOODWYN, of the Bengal Engineers,  
Chief Engineer in Bengal.

WILLIAM GORDON YOUNG, Esquire,  
Director of Public Instruction in Bengal.  
Lieutenant-Colonel WILLIAM ERSKINE BEKER,  
of the Bengal Engineers,

Secretary to the Government of India.  
Lieutenant-Colonel ANDREW SCOTT WAUGH,  
of the Bengal Engineers, Surveyor-General of India.

KENNETH MACKINNON, Esquire, Doctor in Medicine.

HODGUSON PRATT, Esquire,  
Inspector of Schools in Bengal.

HENRY WALKER, Esquire,  
Professor of Anatomy and Physiology in the Medical College  
of Bengal.

THOMAS THOMSON, Esquire, Doctor in Medicine,  
Superintendent of the Botanical Garden at Calcutta.  
FREDERICK JOHN MOUAT, Esquire, Doctor in Medicine,  
and Fellow of the Royal College of Surgeons.

Lieutenant WILLIAM NASSAU LEES, of the Bengal Infantry.

The Reverend WILLIAM KAY, Doctor of Divinity,  
Principal of Bishop's College.

The Reverend ALEXANDER DUFF, Doctor of Divinity.

THOMAS OLDHAM, Esquire,  
Superintendent of the Geological Survey of India.

HENRY WOODROW, Esquire,  
Inspector of Schools in Bengal.

LEONIDAS CLINT, Esquire,  
Principal of the Presidency College.

PROSONNO COOMAR TAGORE,  
Clerk Assistant of the Legislative Council of India.

RAMAPERSHAD RAY,  
 Government Pleader in the Sudder Court of Bengal.  
 The Reverend JAMES OGILVIE, Master of Arts.  
 The Reverend JOSEPH MULLIENS, Bachelor of Arts.  
 Moulavy MUHAMMAD WUJEEH,  
 Principal of the Calcutta Madrasah.  
 ISWAR CHANDRA BIDYASAGAR,  
 Principal of the Sanskrit College of Calcutta.  
 RAMGOPAL GHOSH,  
 Formerly Member of the Council of Education.  
 ALEXANDER GRANT, Esquire,  
 Apothecary to the East India Company.  
 HENRY STEWART REID, Esquire,

Director of Public Instruction in the North-Western Provinces, being the first Chancellor, Vice-Chancellor, and Fellows of the said University, and all the persons who may hereafter become or be appointed to be Chancellor, Vice-Chancellor, or Fellows, as hereinafter mentioned, so long as they shall continue to be such Chancellor, Vice-Chancellor, or Fellows, are hereby constituted and declared to be one Body Politic and Corporate by the name of the University of Calcutta; and such Body Politic shall by such name have perpetual succession, and shall have a common seal, and by such name shall sue and be sued, implead and be impleaded, and answer and be answered unto, in every Court of Justice within the territories under the Government of India.

II. The Body Corporate shall be able and capable in law to take, purchase, and hold any property Power to hold and dispose of property. movable or immovable, which may become vested in it for the purpose of the University by virtue of any purchase, grant, testamentary disposition, or otherwise; and shall be able and capable in law to grant, demise, alien, or otherwise dispose of, all or any of the property; movable and immovable, belonging to the University; and also do all other matters incidental or appertaining to a Body Corporate.

III. If any person being Chancellor, Vice-Chancellor, or Fellow of the said University shall leave Effect of retirement. India without the intention of returning thereto, his office shall thereupon become vacant.

IV. The Governor of the Presidency of Fort William in Bengal for the time being shall be the Chancellor. Chancellor of the said University.

V. The office of Vice-Chancellor shall be held for two years only. Whenever a vacancy shall occur in Vice-Chancellor. the office of Vice-Chancellor of the said University by death, resignation, departure from India, effluxion of time, or otherwise, the Local Government of Bengal shall,

by notification, nominate a fit and proper person, being one of the Fellows of the said University, to be Vice-Chancellor in the room of the person occasioning such vacancy: Provided that on any vacancy in the said office, which shall occur by effluxion of time, the Local Government of Bengal shall have power to re-appoint any future Vice-Chancellor to such office.

VII. The Local Government of Bengal may cancel the appointment of any person already appointed a Fellow may be cancelled. or hereinafter to be appointed a Fellow of the University, and, as soon as such order is notified in the *Gazette* the person so appointed shall cease to be a Fellow.

VIII. The Chancellor, Vice-Chancellor, and Fellows, for the time being, shall have the entire management of and superintendence over the affairs, concerns, and property of the said University; and in all cases unprovided for by this Act, it shall be lawful for the Chancellor, Vice-Chancellor, and Fellows, to act in such manner as shall appear to them best calculated to promote the purposes intended by the said University.

XV. The said Chancellor, Vice-Chancellor, and Fellows shall have power to charge such reasonable Fees. fees for the Degrees to be conferred by them, and upon admission into the said University, and for continuance therein, as they, with the approbation of the Local Government of Bengal shall from time to time see fit to impose. Such fees shall be carried to one General Fee Fund for the payment of expenses of the said University, under the direction and regulations of the Local Government of Bengal, to whom the accounts of income and expenditure of the said University shall once in every year be submitted for such examination and audit as the said Local Government of Bengal may direct.

# THE INDIAN UNIVERSITIES ACT, 1904 (VIII OF 1904).

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## ACT NO. VIII OF 1904.

PASSED BY THE GOVERNOR-GENERAL OF INDIA IN COUNCIL.

*(Received the assent of the Governor-General on the  
24th March, 1904.)*

*This Act came into force on the 1st September, 1904.*

*Amended by Act No. VII of 1921.)*

*An Act to amend the law relating to the Universities of  
British India.*

Whereas by Acts II, XXII and XXVII of 1857, Act XIX of 1882 and Act XVIII of 1887, Universities were established and incorporated at Calcutta, Bombay, Madras, Lahore and Allahabad.

And whereas by Act XLVII of 1860 the Universities of Calcutta, Madras and Bombay were empowered to confer such degrees as should be appointed in the manner provided by the Act;

And whereas by Act I of 1884 the Universities of Calcutta, Madras and Bombay were further empowered to confer the honorary degree of Doctor in the Faculty of Law;

And whereas it is expedient to amend the law relating to the Universities of British India;

It is hereby enacted as follows:—

1. (1) This Act may be called the Indian Universities Act, 1904; and

(2) It shall come into force on such date as the Government may fix in this behalf by notification in the *Gazette of India* or the local official Gazette, as the case may be.

Short title and commencement.

2. (1) This Act shall be deemed to be part of each of the Acts by which the said five Universities were respectively established and incorporated.

Interpretation.

(2) In this Act, unless there is anything repugnant in the subject or context,—

- (a) the term “ College ” or “ affiliated College ” includes any collegiate institution affiliated to or maintained by the University;
- (b) the expression “ the Government ” means the Local Government; and
- (c) the expressions “ the University ” and “ the Act of Incorporation ” and any expression denoting any University, authority or officer or any statute, regulation, rule or bye-law of the University shall be construed with reference to each of the said Universities respectively.

### *The University.*

3. The University shall be and shall be deemed to have been incorporated for the purpose (among others) of making provision for the instruction of students, with power to appoint University Professors and Lecturers, to hold and manage educational endowments, to erect, equip and maintain University libraries, laboratories and museums, to make regulations relating to the residence and conduct of students, and to do all acts, consistent with the Act of Incorporation and this Act, which tend to the promotion of study and research.

4. (1) Notwithstanding anything contained in the Act of Constitution and Incorporation, the Body Corporate of the powers of the Senate, University shall consist of—

- (a) the Chancellor;
- (b) the Vice-Chancellor;
- (c) the *ex-officio* Fellows; and
- (d) the Ordinary Fellows—
  - (i) elected by registered Graduates or by the Senate;
  - (ii) elected by the Faculties; and
  - (iii) nominated by the Chancellor.

(2) The Ordinary Fellows shall, save as herein otherwise provided, hold office for five years :

Provided that an Ordinary Fellow who has vacated his office may, subject to the provisions of this Act, be elected or nominated to be an Ordinary Fellow.

(3) The Body Corporate shall be the Senate of the University, and all powers which are by the Act of Incorporation or by this Act conferred upon the Senate, or upon the Chancellor, Vice-Chancellor and Fellows in their corporate capacity, shall be vested in, and exercised by, the Senate constituted under this Act, and all duties and liabilities imposed upon the University

by the Act of Incorporation shall be deemed to be imposed upon the Body Corporate as constituted under this Act.

(4) No act done by the University shall be deemed to be invalid merely by reason of any vacancy among either class of elected Ordinary Fellows or by reason of the total number of Ordinary Fellows or of members of the profession of education to be included among Ordinary Fellows, being less than the minimum prescribed by this Act.

### *Fellows.*

5. (1) Notwithstanding anything contained in the Act of Incorporation, the persons for the time being performing the duties of the offices mentioned in the list contained in the first schedule to this Act or added to the said list under sub-section (2) shall be the *ex-officio* Fellows of the University.

(2) The Government may, by notification published in the local official Gazette, make additions to, or alterations in, the list of offices contained in the said schedule.

Provided that the number of *ex-officio* Fellows shall not exceed ten.

6. (1) In the case of the Universities of Calcutta, Bombay and Madras, the number of Ordinary Fellows shall not be less than fifty or exceed one hundred; and of such number—

- (a) ten shall be elected by registered Graduates;
- (b) ten shall be elected by the Faculties; and
- (c) the remainder shall be nominated by the Chancellor.

(2) In the case of the Universities of the Punjab and Allahabad, the number of Ordinary Fellows shall not be less than forty nor exceed seventy-five; and of such number—

- (a) ten shall be elected by the Senate or by registered Graduates;
- (b) five shall be elected by the Faculties; and
- (c) the remainder shall be nominated by the Chancellor.

Provided that in the case of the University of Allahabad the Chancellor may direct that such number as he may specify of the Ordinary Fellows referred to in clause (a), shall be elected by the Senate, and the remainder by registered Graduates.

(3) The election of any Ordinary Fellow shall be subject to the approval of the Chancellor.

(4) Elections of the Ordinary Fellows by the Faculties and nominations of such Fellows by the Chancellor under this section shall be made in such manner as to secure that not less than

two-fifths of the Fellows so elected and so nominated respectively shall be persons following the profession of education.

7. (1) Once in every year, on such date as the Chancellor may appoint in this behalf, there shall, if necessary, be an election to fill any vacancy among the Ordinary Fellows elected by registered Graduates.

(2) The Syndicate shall maintain a register on which any Graduate who—

(a) has taken the degree of Doctor or Master in any Faculty, or

(b) has graduated in any Faculty not less than ten years before registration, shall, subject to the payment of an initial fee of such amount as may be prescribed by the regulations, be entitled to have his name entered upon application made within the period of three years from the commencement of this Act or of one year from the date on which he becomes so entitled :

Provided that, if such application is made after the expiry of either of the said periods, the applicant shall be entitled to have his name entered on payment of the said initial fee, and of such further sum as may be prescribed by the regulations.

(3) The name of any Graduate entered on the register shall, subject to the payment of an annual fee of such amount as may be prescribed by the regulations, be retained thereon, and in case of default, shall be removed therefrom, but shall, at any time, be re-entered upon payment of all arrears :

Provided that a Graduate whose name has been already entered on the register may at any time compound for all subsequent payments of the annual fee by paying the sum prescribed in this behalf by the regulations.

(4) No person other than a Graduate whose name is entered on the said register shall be qualified to vote or to be elected at an election held under sub-section (1).

(5) A Graduate registered under this section shall be entitled to such further privileges as may be determined by the regulations.

8. (1) The provision of section 7 shall not apply to the University of the Punjab or to the University of Allahabad until the Chancellor, with the previous sanction of the Governor-General in Council and by notification in the local official Gazette, so directs; and until such time the Ordinary Fellows of the said Universities, who would be elected by registered Graduates if the said provisions were in force, shall be elected by the Senate.

(2) In the case of the University of the Punjab and the University of Allahabad, there shall, if necessary, be an election,

once in every year, on such date as the Chancellor may appoint in this behalf to fill any vacancy among the Ordinary Fellows elected by the Senate.

9. (1) Once in every year, on such date as the Chancellor may appoint in this behalf, there shall, Election by the if necessary, be an election to fill any Faculties. vacancy among the Ordinary Fellows elected by the Faculties.

(2) An election under sub-section (1) shall be held, subject to such directions prescribing the qualifications of the persons to be elected as may, from time to time, be given by the Chancellor with a view to secure the return of duly qualified persons and the fair representation of different branches of study in the Senate.

10. Subject to the provisions of section 6, the Chancellor may nominate any number of fit and proper persons to be Ordinary Fellows. Nomination by the Chancellor.

11. (1) Any Ordinary Fellow may, by letter addressed to the Chancellor, resign his office. Vacating of Office.

(2) Where any Ordinary Fellow has not attended a meeting of the Senate, other than a Convocation, during the period of one year, the Chancellor may declare his office to be vacated.

### *Transitory Provisions.*

12. In their application to the election and nomination of Ordinary Fellows within the period of one year after the commencement of this Act and to the current business of the University, the provisions of this Act shall be read as subject to the following restrictions and modifications:— Election and nomination of Ordinary Fellows within one year after commencement of Act, and temporary continuance of existing University administration.

(a) In the case of the Universities of Calcutta, Bombay, and Madras, the Chancellor shall, as soon as may be after the commencement of this Act, make an order directing that the Ordinary Fellows, who under the said provisions are to be elected by registered Graduates, shall be elected by the elected Fellows holding office at the commencement of this Act, or by such Graduates of the University as the Chancellor may determine, or partly by elected Fellows and partly by such Graduates, and in such manner as the Chancellor may direct.

(b) When the Ordinary Fellows mentioned in clause (a) have been elected, the Chancellor shall proceed to the nomination of Ordinary Fellows under section 6, sub-section (1), clause (c).

- (c) The Ordinary Fellows mentioned in clauses (a) and (b) shall, as soon as may be after their appointment and in such manner as the Chancellor may direct, elect the Fellows who under the said provisions are to be elected by the Faculties.
- (d) In the case of the Universities of the Punjab and Allaha-bad, the Chancellor shall, as soon as may be after the commencement of this Act, proceed to nominate Ordinary Fellows under section 6, sub-section (2), clause (c).
- (e) When Ordinary Fellows have been appointed under clause (d), the Chancellor shall make an order directing that the Fellows who under the said provisions are to be elected by the Senate, shall be elected by the Ordinary Fellows appointed under clause (d), or by elected Fellows holding office, at the commencement of this Act, or partly by such Ordinary Fellows and partly by elected Fellows, in such manner as the Chancellor may direct.
- (f) The Ordinary Fellows mentioned in clauses (d) and (e) shall, as soon as may be after their appointment, and in such manner as the Chancellor may direct, elect the Fellows who under the said provisions are to be elected by the Faculties.
- (g) An election under clause (c) or clause (f) shall be made subject to such directions prescribing the qualifications of the persons to be elected as may be given by the Chancellor, with a view to secure the return of duly qualified persons and a fair representation of different branches of study in the Senate.
- (h) As soon as Ordinary Fellows have been nominated and elected under clauses (a), (b) and (c), or under clauses (d), (e) and (f), as the case may be, and the persons so elected have been approved by the Chancellor, the Chancellor shall declare that the Body Corporate of the University has been constituted in accordance with the provisions of this Act, and shall append to the declaration a list of the Senate, and shall forward the said declaration and the appended list to the Governor-General in Council, who shall cause the declaration and list to be published in the *Gazette of India*.
- (i) The seniority of the Fellows included in the list mentioned in clause (h), shall be determined by the order in which their names appear in the list.
- (j) Until the said declaration is published under clause (h) the Fellows holding office at the commencement of this Act shall, together with the Chancellor and the Vice-Chancellor, continue to be the Senate of the Uni-

- versity, and shall be entitled to exercise the powers conferred upon them by the Act of Incorporation.
- (k) Every Ordinary Fellow elected or nominated under this section shall, unless his Fellowship is previously vacated by death, resignation or any other cause, hold office for not less than three years.
  - (l) At or about the end of the third year from the publication of the declaration mentioned in clause (h), the names of, as nearly as may be, one-fifth of the total initial number—
    - (i) of Ordinary Fellows elected under clause (a) or clause (e) as the case may be;
    - (ii) of Ordinary Fellows elected under clause (c) or clause (f); and
    - (iii) of Ordinary Fellows nominated by the Chancellor (after deducting from the said one-fifth the names in each class which have previously been removed from the list mentioned in clause (h) by reason of death, resignation or any other cause) shall be drawn by lot from among the elected and the nominated Ordinary Fellows whose names were included in the list mentioned in clause (h), and those whose names are so shown shall thereupon cease to be Ordinary Fellows.
  - (m) At or about the end of the fourth, fifth and sixth years from the publication of the said declaration, the names of Ordinary Fellows shall be drawn by lot from each class of Ordinary Fellows included in the said list, in the manner provided in clause (l), so as to secure that, as nearly as may be, one-fifth of the Fellowships of the Ordinary Fellows so included in each class shall be vacated in each year.
  - (n) An Ordinary Fellow elected or nominated under this section, who has not previously vacated his Fellowship shall cease to be a Fellow at the end of the seventh year from the publication of the said declaration.
  - (o) The Vice-Chancellor holding office at the commencement of this Act, shall continue to hold office until the publication of the said declaration, and shall, if he is a member of the Senate as constituted under this Act, continue to hold office as Vice-Chancellor for the remainder of the term for which he was originally appointed.
  - (p) The members of the Syndicate holding office at the commencement of this Act, shall continue to conduct the executive business of the University until the publication of the said declaration; and, upon such publication, the Senate shall, in such manner as the Chancellor may direct, appoint a provisional Syndicate

to conduct the executive business of the University until the Syndicate has been constituted under this Act.

- (q) The Senate as constituted under this Act may, give orders for the provisional constitution of Faculties, Boards of Studies and of any Board or Committee of the Senate, pending the constitution of such Faculties, Boards and Committees in conformity with the regulations.
- (r) University Examiners and all officers and servants of the University shall continue to hold office and to act, subject to the conditions governing their tenure of office or employment, except in so far as such conditions may be altered by competent authority.
- (s) The statutes, regulations and bye-laws of the University in force at the commencement of this Act shall continue to be in force, except in so far as the said statutes, regulations and bye-laws shall be altered or repealed by competent authority.

#### *Honorary Fellows.*

13. (1) (a) A Fellow holding office at the commencement of this Act shall cease to be a Fellow.

Honorary Fellows. (b) Where a Fellow included in clause (a) does not become a Fellow under this Act, he shall be an Honorary Fellow for life.

(c) Where a Fellow included in clause (a) becomes a Fellow under this Act, he shall, whenever and so often as he ceases to be a Fellow under this Act, become an Honorary Fellow as provided in clause (b).

(2) The Chancellor may nominate any person to be an Honorary Fellow for life, who is eminent for his attainments in any branch of learning, or is an eminent benefactor of the University, or is distinguished for services rendered to the cause of education generally.

(3) Notwithstanding anything contained in this section, any Fellow, who at the commencement of this Act is entitled as such, to vote for the election of any person to be a member of any Council for the purpose of making laws and regulations or of any local authority shall continue to be so entitled as if this Act had not been passed.

#### *Faculties and Syndicate.*

14. (1) Nothing contained in the Act of Incorporation shall be deemed to prohibit the constitution of a new Faculty or the abolition or reconstitution of any existing Faculty by the Senate under regulations made in accordance with the provisions of this Act.



(2) Regulations made under sub-section (1) may—

- (a) provide for the assignment of Fellows to the several Faculties by order of the Senate; and
- (b) empower the Fellows so assigned to add to their number in such manner and for such period as may be prescribed, Graduates in the Faculty and other persons possessing special knowledge of the subjects of study represented by the Faculty:

Provided that the number of persons so to be added to the Faculty shall not exceed half the number of Fellows assigned to the Faculty.

(3) A person added to a Faculty under sub-section (2), clause (b), shall have the right to take part in the ordinary business of the Faculty, and in any election of an Ordinary Fellow by the Faculty, but shall not be entitled to take part in the election of the Syndicate.

15. (1) The executive government of the University shall be vested in the Syndicate, which shall consist of—

- (a) the Vice-Chancellor as Chairman;
- (b) the Director of Public Instruction for the Province in which the head-quarters of the University are situated; and, in the case of the University of Allahabad, also the Director of Public Instruction in the Central Provinces; and
- (c) not less than seven or more than fifteen *ex-officio* or Ordinary Fellows elected by the Senate or by the Faculties in such manner as may be provided by the regulations, to hold office for such period as may be prescribed by the regulations.

(2) The regulations referred to in sub-section (1) shall be so framed as to secure that a number, not falling short by more than one of a majority of the elected members of the Syndicate, shall be Heads of, or Professors in, Colleges affiliated to the University.

(3) If in the case of any election the question is raised whether any person is or is not a Professor within the meaning of sub-section (2), the question shall be decided by the Senate.

### *Degrees.*

16. The Senate may institute and confer such degrees, and grant such diplomas, licenses, titles and marks of honour in respect of degrees and examinations as may be prescribed by regulation.

17. Where the Vice-Chancellor and not less than two-thirds of the other members of the Syndicate recommend that an honorary degree be conferred on any person on the ground that he is, in their opinion, by reason of eminent position and attainments, a fit and proper person to receive such a degree, and where their recommendation is supported by not less than two-thirds of the Fellows present at a meeting of the Senate and is confirmed by the Chancellor, the Senate may confer on such person the honorary degree so recommended without requiring him to undergo any examination.

18. Where evidence is laid before the Syndicate showing that any person on whom a degree, diploma, license, title or mark of honour conferred or granted by the Senate has been convicted of what is, in their opinion, a serious offence, the Syndicate may propose to the Senate that the degree, diploma, license, title or mark of honour be cancelled, and, if the proposal is accepted by not less than two-thirds of the Fellows present at a meeting of the Senate and is confirmed by the Chancellor, the degree, diploma, license, title or mark of honour shall be cancelled accordingly.

#### *Affiliated Colleges.*

19. Save on the recommendation of the Syndicate, by special order of the Senate, and subject to any regulations made in this behalf, no person shall be admitted as a candidate at any University examination other than an examination for Matriculation, unless he produces a certificate from a College affiliated to the University, to the effect that he has completed the course of instruction prescribed by regulation.

20. Any College affiliated to the University before the passing of this Act may continue to exercise the rights conferred upon it by such affiliation, save in so far as such rights may be withdrawn or restricted in the exercise of any power conferred by the Act of Incorporation or by this Act.

21. (1) A College applying for affiliation to the University shall send a letter of application to the Registrar, and shall satisfy the Syndicate—

- (a) that the College is to be under the management of a regularly-constituted governing body;
- (b) that the qualifications of the teaching staff and the conditions governing their tenure of office are such

- as to make due provision for the courses of instruction to be undertaken by the College;
- (c) that the buildings in which the College is to be located are suitable, and that provision will be made, in conformity with the regulations, for the residence, in the College, or in lodgings approved by the College, of students not residing with their parents or guardians, and for the supervision and physical welfare of students;
  - (d) that due provision has been or will be made for a library;
  - (e) where affiliation is sought in any branch of experimental science, that arrangements have been or will be made in conformity with the regulations for imparting instruction in that branch of science in a properly equipped laboratory or museum;
  - (f) that due provision will, so far as circumstances may permit, be made for the residence of the Head of the College and some members of the teaching staff in or near the College or the place provided for the residence of students;
  - (g) that the financial resources of the College are as such as to make due provision for its continued maintenance;
  - (h) that the affiliation of the College, having regard to the provision made for students by other Colleges in the same neighbourhood, will not be injurious to the interests of education or discipline; and
  - (i) that the College rules fixing the fees (if any) to be paid by the students have not been so framed as to involve such competition with any existing College in the same neighbourhood as would be injurious to the interests of education.

The application shall further contain an assurance that, after the College is affiliated, any transference of management and all changes in the teaching staff shall be forthwith reported to the Syndicate.

(2) On receipt of a letter of application under sub-section (1), the Syndicate shall—

- (a) direct a local inquiry to be made by a competent person authorized by the Syndicate in this behalf;
- (b) make such further inquiry as may appear to them to be necessary; and
- (c) report to the Senate on the question whether the application should be granted or refused, either in whole or in part, embodying in such report the results of any inquiry under clauses (a) and (b).

And the Senate shall, after such further inquiry (if any), as may appear to them to be necessary, record their opinion on the matter.

(3) The Registrar shall submit the application and all proceedings of the Syndicate and Senate relating thereto to the Government, who, after such further inquiry as may appear to them to be necessary, shall grant or refuse the application or any part thereof.

(4) Where the application or any part thereof is granted, the order of the Government shall specify the courses of instruction in respect of which the College is affiliated; and, where the application or any part thereof is refused, the grounds of such refusal shall be stated.

(5) An application under sub-section (1) may be withdrawn at any time before an order is made under sub-section (3).

22. Where a College desires to add to the courses of instruction in respect of which it is affiliated, the procedure prescribed by section 21 shall, so far as may be, be followed.

23. (1) Every College affiliated to the University, whether before or after the commencement of this Act, shall furnish such reports, returns and other information as the Syndicate may require to enable it to judge of the efficiency of the College.

(2) The Syndicate shall cause every such College to be inspected from time to time by one or more competent persons authorized by the Syndicate in this behalf.

(3) The Syndicate may call upon any College so inspected to take, within a specified period, such action as may appear to them to be necessary in respect of any of the matters referred to in section 21, sub-section (1).

24. (1) A member of the Syndicate who intends to move that the rights conferred on any College by affiliation be withdrawn, in whole or in part, shall give notice of his motion, and shall state in writing the grounds on which the motion is made.

(2) Before taking the said motion into consideration, the Syndicate shall send a copy of the notice and written statement mentioned in sub-section (1) to the Head of the College concerned, together with an intimation that any representation in writing submitted within a period specified in such intimation on behalf of the College will be considered by the Syndicate:

Provided that the period so specified may, if necessary, be extended by the Syndicate.

(3) On receipt of the representation or on expiration of the period referred to in sub-section (2), the Syndicate, after considering the notice of motion, statement and representation and after such inspection by any competent person authorized by the

Syndicate in this behalf, and such further inquiry as may appear to them to be necessary, shall make a report to the Senate.

(4) On receipt of the report under sub-section (3) the Senate shall, after such further inquiry (if any) as may appear to them to be necessary, record their opinion on the matter.

(5) The Registrar shall submit the proposal and all proceedings of the Syndicate and Senate relating thereto to the Government, who after such further inquiry (if any) as may appear to them to be necessary, shall make such order as the circumstances may, in their opinion, require.

(6) Where by an order made under sub-section (5) the rights conferred by affiliation are withdrawn, in whole or in part, the grounds for such withdrawal shall be stated in the order.

### *Regulations.*

25. (1) The Senate, with the sanction of the Government, may from time to time make regulations consistent with the Act of Incorporation as amended by this Act and with this Act to provide for matters relating to the University.

(2) In particular, and without prejudice to the generality of the foregoing power, such regulations may provide for—

- (a) the procedure to be followed in holding any election of Ordinary Fellows;
- (b) the constitution, reconstitution or abolition of Faculties, the proportion in which the members, other than the *ex-officio* members of the Syndicate, shall be elected to represent the various Faculties, and mode in which such election shall be conducted;
- (c) the procedure at meetings of the Senate, Syndicate and Faculties and the quorum of members to be required for the transaction of business;
- (d) the appointment of Fellows and others to be members of Boards of Studies, and the procedure of such Boards and the quorum of members to be required for the transaction of business;
- (e) the appointment and duties of the Registrar and of officers and servants of the University, and of Professors and Lecturers appointed by the University;
- (f) the appointment of Examiners, and the duties and powers of Examiners, in relation to the examinations of the University;
- (g) the form of the certificate to be produced by a candidate for examination under section 19, and the condition on which any such certificate may be granted;
- (h) the registers of Graduates and students to be kept by the University, and the fee (if any) to be paid for the entry or retention of a name on any such register;

- (i) the inspection of Colleges and the reports, returns and other information to be furnished by Colleges;
- (j) the registers of students to be kept by Colleges affiliated to the University;
- (n) the rules to be observed and enforced by Colleges affiliated to the University in respect of the transfer of students;
- (l) the fees to be paid in respect of the courses of instruction given by Professors or Lecturers appointed by the University;
- (m) the residence and conduct of students;
- (n) the courses of study to be followed and the conditions to be complied with by candidates for any University examination, other than an examination for matriculation, and for degrees, diplomas, licenses, titles, marks of honours, scholarships and prizes conferred or granted by the University;
- (o) the conditions to be complied with by schools desiring recognition for the purpose of sending up pupils as candidates for the Matriculation examination and the conditions to be complied with by candidates for Matriculation, whether sent up by recognised schools or not;
- (p) the conditions to be complied with by candidates, not being students of any College affiliated to the University, for degrees, diplomas, licenses, titles, marks of honour, scholarships and prizes conferred or granted by the University; and
- (q) the alteration or cancellation of any rule, regulation, statute or bye-law of the University in force at the commencement of this Act.

26. (1) Within one year after the commencement of this Act or within such further period as the Government may fix in this behalf—

- (a) the Senate as constituted under this Act shall cause a revised body of regulations to be prepared and submitted for the sanction of the Government;
- (b) if any additions to, or alterations in, the draft submitted appear to the Government to be necessary, the Government, after consulting the Senate, may sanction the proposed body of regulations, with such additions and alterations as appear to the Government to be necessary.

(2) Where a draft body of regulations is not submitted by the Senate within the period of one year after the commencement of this Act, or within such further period as may be fixed under sub-section (1), the Government may, within one year after the expiry of such period or of such further period, make regulations

which shall have the same force as if they had been prepared and sanctioned under sub-section (1).

*Miscellaneous.*

27. The Governor-General in Council may, by general or special order, define the territorial limits within which, and specify the Colleges in respect of which, any powers conferred by or under the Act of Incorporation or this Act shall be exercised.

*	*	*	*	*	*
29.	The Acts	mentioned	in the	second	schedule
Repeals.		are hereby		repealed	to the extent
				specified	in the
				fourth	column thereof.

In supersession of all previous notifications on the subject, the Government of Bengal (Ministry of Education) is pleased to appoint the following to be *ex-officio* Fellows of the University of Calcutta under section 5, sub-section (2) of the Indian Universities Act, 1904 (VIII of 1904), as amended by Act VII of 1921 :—

THE FIRST SCHEDULE.

(Section 5.)

*Ex-Officio* FELLOWS OF THE UNIVERSITY.

*The University of Calcutta.*

His Excellency the Governor of Assam, Shillong.

The Chief Justice of the High Court of Judicature at Fort William in Bengal.

Lord Bishop of Calcutta and Metropolitan of India.

The Member of the Council of the Governor-General in Charge of the Department of Education.

The Member of the Executive Council of the Government of Bengal or the Minister appointed by the Governor to be in Charge of the Department of Education.

The Minister for Education, Assam.

The Secretary to the Government of Bengal, Education Department.

The Director of Public Instruction, Bengal.

The Director of Public Instruction, Assam.

The Principal, Presidency College, Calcutta.

*The University of Bombay.*

The Chief Justice of the High Court of Judicature at Bombay

The Bishop of Bombay.

The Ordinary Members of the Council of the Governor of Bombay.

The Director of Public Instruction in Bombay.

*The University of Madras.*

The Chief Justice of the High Court of Judicature at Madras.

The Bishop of Madras.

The Ordinary Members of the Council of the Governor of Madras.

The Director of Public Instruction in Madras.

*The University of Punjab.*

The Chief Judge of the Chief Court of the Punjab.

The Bishop of Lahore.

The Director of Public Instruction in the Punjab.

The representatives of such Chiefs (if any) of territories not comprised in British India as the Local Government may, by notification in local official Gazette, specify in this behalf.

*The University of Allahabad.*

The Chief Justice of the High Court of Judicature for the North-Western Provinces.

The Bishop of Lucknow.

The Directors of Public Instruction in the United Provinces of Agra and Oudh and in the Central Provinces.

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## THE SECOND SCHEDULE.

(Section 29.)

## ENACTMENTS REPEALED.

Year.	No.	Short title.	Extent of repeal.
1857	II	The Calcutta University Act, 1857.	In section 2 the word " said " wherever it occurs. In section 3, the first sentence and the words " Provided that." In section 5, the words " in the Calcutta Gazette." Section 6. Section 8, except the first sentence. Sections 9, 10, 11, 12, 13, and 14.
1857	XXII	The Bombay University Act, 1857.	In section 2, the word " said " wherever it occurs. In section 3, the first sentence and the words " Provided that." Section 6. Section 8, except the first sentence. Sections 9, 10, 11, 12, 13 and 14.
1857	XXVII	The Madras University Act, 1857.	In section 2, the word " said " wherever it occurs. In section 3, the first sentence and the words " Provided that." Section 6. Section 8, except the first sentence. Sections 9, 10, 11, 12, 13 and 14.
1860	XLVII	The Indian Universities (Degrees) Act, 1860.	The whole Act.
1882	XIX	The Punjab University Act, 1882.	Section 6. In section 7, sub-section (1) In section 8, in sub-section (1), the words after the word " Fellow " to the end of the sub-section; and in sub-section (2), the words from the word " appointed " to the words " this Act." In section 9, the words " under this Act." Sections 10 and 11. Section 12, except the last paragraph. Sections 13, 14, 15, 16 and 18. In section 20 the words " made or " "section six, clauses (b) and (c) and" and "under sections fourteen, fifteen and sixteen." In the Schedule, Part I.

Year.	No.	Short title.	Extent of repeal.
1884	I	The Indian Universities (Honorary Degrees) Act, 1884.	The whole Act.
1887	XVIII	The Allahabad University Act, 1887.	<p>Section 5.</p> <p>In section 6, sub-section (I).</p> <p>In section 7, sub-section (I) and in sub-section (2), the words from the word " Fellow " to the end of the sub-section.</p> <p>Sections 10, 11, 12, 13, 14, 15 and 17.</p> <p>In section 20, the words and figures " appointments made and " under section 5, sub-section (I), clauses (b) and (c), " under sections, 14 and 15 " and " under section 17."</p> <p>In the Schedule, Part I.</p>

## ACT NO. II OF 1905.

PASSED BY THE GOVERNOR-GENERAL OF INDIA IN COUNCIL.

*(Received the assent of the Governor-General on the  
10th February, 1905.)*

An Act to validate action taken under the Indian Universities Act, 1904.

Whereas the Indian Universities Act, 1904 (VIII of 1904), authorizes the Chancellor of each of the Indian Universities to make directions, declarations and orders with a view to the constitution of the Body Corporate and the appointment of the Provisional Syndicate thereof;

And whereas various directions, declarations and orders have been made in pursuance of the said authority, and Bodies Corporate and Provisional Syndicates have been constituted and appointed thereunder;

And whereas doubts have been raised as to the construction of the said Act and as to the validity of some of the said directions, declarations and orders and as to the validity of the constitution and appointment of some of the Bodies Corporate and Provisional Syndicates, and it is expedient to remove such doubts;

It is hereby enacted as follows:—

1. This Act may be called the Indian Universities  
Short Title. (Validation) Act, 1905.
2. All directions, declarations and orders made as aforesaid shall be deemed to have been duly made  
Validation of direc- under the Indian Universities Act, 1904  
tions, declarations and orders. (VIII of 1904).
3. The Bodies Corporate and Provisional Syndicates consti-  
Validation of consti- tuted and appointed as aforesaid shall be  
tution and appoint- deemed to have been duly constituted  
ment of Bodies. and appointed under the said Act.

## ACT NO. XI OF 1911.

PASSED BY THE GOVERNOR-GENERAL OF INDIA IN COUNCIL.

*(Received the assent of the Governor-General on the  
21st March, 1911.)*

An Act to amend the Indian Universities Act, 1904 (VIII of 1904).

Whereas it is expedient to amend the Indian Universities Act, 1904;

It is hereby enacted as follows :—

Short Title. 1. This Act may be called the Indian Universities (Amendment) Act, 1911.

2. To Section 6, Sub-Section (2). of the said Act the following proviso should be added, namely :—

“ Provided that in the case of the University of Allahabad the Amendment of Sec. Chancellor may direct that such number as tion, 6, Act VIII of he may specify of the Ordinary Fellows, 1904. referred to in clause (a) shall be elected by the Senate and the remainder by Registered Graduates.”

## ACT NO. VII OF 1921.

PASSED BY THE INDIAN LEGISLATIVE ASSEMBLY.

(Received the assent of the Governor-General on the  
27th March, 1921.)

An act to amend the law relating  
to the Calcutta University.

Whereas it is expedient to amend  
the law relating to the Calcutta  
University ; It is hereby enacted as  
follows :

1. This act may be called the  
Calcutta University  
Short Title. Act, 1921.

2. In Section 4 of the Calcutta  
University Act, 1857  
II of 1857. Amendment of  
Section 4, Act (hereinafter referred  
to as the said Act),  
II of 1857. for the words "Govern-  
nor-General of India," the words  
"Governor of the Presidency of Fort  
William in Bengal" shall be sub-  
stituted.

3. In Sections 5, 7 and 15 of the  
said Act, for the words  
Amendment of Sections 5, 7  
and 15, Act II of 1857. "Governor-General of  
India in Council" in  
all places where they  
occur, the words "Local Government  
of Bengal" shall be substituted.

VIII of 1904 4. The Sections of  
Indian Universities  
Repeal. Act, 1904, which are  
specified in the first column of the  
Schedule, are hereby repealed to the  
extent specified in the second column  
thereof.

## THE SCHEDULE.

(SEE SECTION 4.)

1	2
Sec.	Extent of repeal.
2	In clause (b) of sub-section (2) the words "in relation to the University of Calcutta the Governor-General in Council, and in relation to the other Universities."
4	Clause (b) of sub-section (1)—the whole—and in sub-section (3) the words "or in the case of the University of Calcutta, upon the Chancellor, Rector, Vice-Chancellor and Fellows in their corporate capacity."
5	In sub-section (2) the words "in the Gazette of India or" and the words "as the case may be."
28	The whole.

## II

# NEW REGULATIONS

### CHAPTER I.

#### THE SENATE.

1. The Senate shall meet ordinarily once a year in the month of January and may meet at other times if convened by the Vice-Chancellor, or, in his absence from Calcutta, or when the office of Vice-Chancellor is vacant, by the Senior Ordinary Fellow present in Calcutta.

2. The *ex-officio* Fellows of the University are always the Senior Fellows in order of official precedence. The seniority of all Ordinary Fellows is according to the date and order of their first appointment under the Indian Universities Act, 1904.

3. The Vice-Chancellor, or, in his absence, or when the office of Vice-Chancellor is vacant, the Senior Ordinary Fellow present in Calcutta shall convene a meeting of the Senate on the requisition of any six Fellows.

4. No question shall be brought under the consideration of the Senate which has not first been considered by the Syndicate.

5. Except in the case of urgent business, twelve clear days' notice shall be given of every meeting.

6. The Registrar shall, with notice, issue an agenda paper showing the business to be brought before the meeting, the terms of all resolutions to be proposed of which notice in writing has previously reached him, and the names of the proposers. Notices in writing of additional resolutions and of proposed amendments and the terms thereof should reach the Registrar four clear days before the day of such meeting.

7. The Registrar shall also, two clear days before the day of meeting, forward to each member of the Senate an agenda paper showing all the motions and amendments and any additional business proposed by the Syndicate; and no motion and, unless expressly sanctioned by a majority of the members present, no amendment, of which such notice has not been given, shall be put to the meeting, other than a motion for any change in the order of business, a motion for dissolution, or adjournment, or for passing to the next business on the agenda paper or, for directing the Syndicate to review their decision, or an amendment which may be accepted by the Chairman as merely formal.

The adjournment of a debate may, however, be moved for the purpose of giving notice of an amendment which has been disallowed.

8. Fifteen members of the Senate shall constitute a quorum, and all questions shall be decided by a majority of the votes of the members present.

9. The Chancellor, or, in his absence, the Vice-Chancellor shall preside at meetings of the Senate, or, if the Vice-Chancellor be not present, a Chairman for the occasion shall be elected by the members present. If the votes, including that of the Chairman, are equally divided, the Chairman shall have a casting vote.

#### ORDER OF BUSINESS.

10. At the time appointed for the meeting, the Registrar shall take notice whether a quorum is present. If there is not, and if a quorum is not present within fifteen minutes, no meeting shall be held.

11. If at any time during the progress of business, any member shall call attention to the fact that there is not a quorum present, the meeting shall forthwith be dissolved. Such dissolutions shall be recorded by the Registrar under the signature of the Chairman.

12. At every meeting the business shall be taken in the following order :

- (i) The election, if necessary, of the Chairman.
- (ii) University appointments.
- (iii) Any motion for a change in the order of business.
- (iv) Matters brought forward by the Syndicate.
- (v) Other business.

#### RULES OF DEBATE.

##### (i) *Motions.*

13. Every motion shall be affirmative in form, and shall begin with the word 'that.'

14. Every motion at a meeting must be seconded; otherwise it shall drop.

15. When a motion has been seconded, it shall be stated from the Chair unless it be ruled out of order.

16. When the motion has been thus stated, it may be discussed as a question to be resolved either in the affirmative or in the negative, or as proposed to be varied by way of amendment. When no Fellow rises to speak to the motion, the

Chairman shall proceed to put the question to the vote in the manner hereinafter mentioned.

17. Not more than one motion and one amendment thereto shall be placed before the meeting at the same time.

18. A motion once disposed of shall not be again brought forward at the same meeting, or at any adjournment thereof. A motion substantially identical in part with one already disposed of may be brought forward with the omission of such part.

(ii) *Amendments.*

19. Any proposal before the meeting may be amended (a) by leaving out a word or words; (b) by leaving out a word or words in order to add or insert some other word or words; (c) by adding or inserting a word or words.

When the amendment is of the first kind, the form in which it will be proposed and handed to the Chair will be, "That the words (mentioning them) be left out of the question."

When the amendment is of the second kind, the form will be "That the words (mentioning them) be left out of the question, in order to add (or insert) the words (mentioning them)."

When the amendment is of the third kind, the form will be, "That the words (mentioning them) be added (or inserted)."

20. No amendment shall be proposed which would in effect constitute a direct negative to the original motion, or which would alter the first word.

21. Every amendment must be relevant to the motion upon which it is moved.

22. No amendment shall be proposed which substantially raises a question already disposed of by the meeting, or which is inconsistent with any resolution already passed by it.

23. An amendment, the substance of which has been disposed of in part, may be modified by its proposer so as to retain only the part not so disposed of.

24. The order in which amendments of which previous notice has been given are to be brought forward shall be determined by the Chairman.

25. An amendment must be seconded in the same way as a motion; otherwise it shall drop. A seconder of an amendment may reserve his speech with the permission of the Chairman.

26. When an amendment has been moved and seconded it shall, unless ruled out of order, be stated from the Chair, and then the debate may proceed on the original motion and the amendment together.

27. When the Chairman has ascertained that no other Fellow entitled to address the meeting desires to speak, the mover of the original resolution may reply upon the whole



debate. But the mover of an amendment, or of a motion for dissolution or adjournment, or of a motion to pass to the next business on the agenda paper has no right of reply.

28. No Fellow shall speak to the question after the mover has entered on his reply.

29. When the Debate is concluded the Chairman shall, after summing up, if he so desires, put the question to the vote thus :

If there is no amendment, the Chairman shall say, " The question is " and state the motion, and shall then take the votes of the meeting.

If there is an amendment, the Chairman shall say, " It has been moved " and shall state the motion; then he shall say " Since which it has been moved by way of amendment."

- (a) " that the following word or words be omitted " (if the amendment is one of the first kind);
- or (b) " that the following word or words be omitted, and that the following word or words be added or inserted," indicating where such words are to be added or inserted (if the amendment is of the second kind);
- or (c) " that the following word or words be added or inserted," mentioning where such word or words are proposed to be added or inserted (if the amendment is of the third kind).

The votes of the members present in the meeting shall then be taken on the amendment by a show of hands.

30. If an amendment is negatived, the original motion shall be again stated from the Chair, and, subject to the foregoing Regulations, any other amendment which is in order may then be proposed thereto.

31. If an amendment is carried, the motion as amended shall be stated from the Chair, and may then be debated as a substantive question, to which the further amendments to the original motion which are in order and so far as they shall be applicable may be proposed, subject to the foregoing Regulations, and such further amendments shall be disposed of in the same manner as the original amendment.

### (iii) *Adjournments.*

32. A motion " That this meeting be now dissolved " or " that this meeting be now adjourned to (some specified date and hour)" may be moved at any time as a distinct question, but not as an amendment, nor so as to interrupt a speech. If a motion for dissolution is carried, the business before the meeting shall drop. If a motion for adjournment is carried, the meeting shall be adjourned, and the business shall be resumed at the adjourned meeting.

33. A motion " That the debate be now adjourned to (some specified date and hour)" may be moved in the like manner, and

if it be carried shall have the effect of postponing the debate on the question under consideration till the date and hour specified, and the other items on the agenda paper shall be proceeded with. If the motion be negatived, the debate shall be resumed.

34. No amendment shall be moved to a motion under either of the two last preceding Regulations, except one for substituting a different date and hour for that to which it is proposed to adjourn the meeting or debate, or a motion under Regulation 36.

35. A meeting or a debate renewed or continued after an adjournment is to be deemed one with that preceding the adjournment.

36. A motion "That the meeting pass to the next business on the agenda paper" may be made at any time, in like manner and subject to the same rules as one for adjournment. If such a motion be carried, the motion under consideration and the amendment thereon, if any, shall drop.

37. No motion for the dissolution or for the adjournment of the meeting, or for the adjournment of the debate, or to pass to the next business, shall, except by leave of the meeting, be moved or seconded by any Fellow who has spoken to the question then before the meeting, or who, during the discussion of such question, has already made one of the aforesaid motions. Any such motion shall take precedence of any question that may be before the meeting, and, if not withdrawn, must be disposed of before such question.

38. When a motion of the class contemplated in the last preceding Regulation has been brought forward and negatived, no other motion of that class shall be brought forward until after the lapse of what the Chairman shall deem a reasonable time; nor shall a debate be allowed on such second or subsequent motion except with the permission of the Chairman.

#### (iv) *Miscellaneous.*

39. The Fellow, who first rises to speak at the conclusion of a speech, has the right to be heard. When two or more Fellows rise to speak at the same time, the Chairman shall decide who shall speak first.

40. Except as hereinafter provided, a Fellow, who has spoken to a motion or amendment, is not at liberty to speak again to such motion or amendment.

41. In so far as the question raised by an amendment is one on which he has not yet spoken, any Fellow may speak to that question, though he has spoken to the original question or a previous amendment,

42. No Fellow, except with the permission of the meeting, shall speak for more than fifteen minutes when proposing a motion or amendment, or for more than ten minutes when seconding or speaking to a motion or amendment, or when replying.

43. It shall be open to the Senate under special circumstances and by a special vote to reduce the time limits specified in Regulation 42.

44. The Chairman may, at any stage in the proceedings at his own discretion or at the request of a Fellow, explain the scope and effect of the motion or amendment which is before the meeting. He may, also at the conclusion of a debate, sum up the debate if he so desires.

45. Proposals relating to the conferring of Honorary Degrees, Votes of thanks, Messages of Congratulation or Condolence, Addresses, and other matters of a like nature, may be moved from the Chair.

46. If the Chairman desires to take an active part in a debate he shall vacate the chair until the vote on that debate shall have been taken. During such time the chair shall be taken by the senior Fellow present who has not already taken part in the debate and who waives his right to do so. The acting Chairman shall during the debate in question exercise all the ordinary rights of the Chairman.

47. Any Fellow may, with the permission of the Chairman, rise, even while another is speaking, to explain any expression used by himself which may have been misunderstood by the speaker, but he shall confine himself strictly to such explanation.

48. Any Fellow may call the Chairinan's attention to a point of order even while another Fellow is addressing the meeting, but no speech shall be made on such point of order.

49. The Chairman shall be the sole judge on any point of order, and may call any Fellow to order, and may, if necessary, dissolve the meeting.

50. No motion or amendment shall be withdrawn from the decision of the meeting without its unanimous consent; but the consent shall be presumed if the mover states his wish to withdraw the motion or amendment, and the Chairman, after an interval during which no dissent is expressed, announces that it is withdrawn.

51. Any motion or amendment, standing in the name of a member who is absent from a meeting, or who declines to move it, may be brought forward by any other member.

#### (v) Voting.

52. On putting any question to the vote, the Chairman shall call for an indication of the opinion of the Senate by a show

of hands in the affirmative and negative, and shall declare the result thereof according to his opinion.

53. Any six Fellows may then demand a division, except on a motion of the kind contemplated in Regulations 32, 33, and 36.

54. The Chairman shall thereupon give such directions for effecting the division as he shall consider expedient. The names of the gentlemen who vote for or against the motion, or decline to vote, shall be recorded.

55. If no division is demanded, any Fellow shall have the right to dissent and to have the fact of his dissent recorded, provided such dissent be announced as soon as the Chairman shall have declared the result of the voting.

### COMMITTEES.

56. The Senate may, when it thinks fit, appoint a committee consisting of any number of its members, or it may resolve itself into a committee for the consideration of business duly brought before it.

57. A motion for the appointment of a committee, or for the resolution of the meeting into a committee, may be made by any member at any time, and without the notice required by Regulation 5.

58. A motion for the appointment of a committee must define the purpose for which the committee is to serve and the number of members to compose it. Amendments for enlarging or restricting the operations of a committee or for enlarging or restricting the number, may be made without previous notice. If the motion is carried, the member moving shall name the persons whom he wishes to form the committee. Amendments may be made proposing other names. A ballot shall then be taken, if necessary, and the requisite number appointed from those who obtain the largest number of votes.

59. The quorum for a committee of the whole Senate shall be the same as that provided for the meetings of the Senate; the quorum for a committee appointed by the Senate shall be determined at the time of appointment and shall be not less than a majority of the members appointed.

60. The Chairman of a committee of the whole Senate shall be the same as for a meeting of the Senate; the Chairman of a committee appointed by the Senate shall be appointed by the Senate at the time of the appointment of the committee.

In committee the proceedings shall be governed by the Regulations framed for debate, which, however, may be relaxed at the discretion of the Chairman.

61. The resolution passed by the Senate in committee shall be embodied in a report prepared by the Registrar and signed by the Chairman, but shall not become final until they have been confirmed by the Senate at a subsequent meeting.

62. The resolutions of a committee appointed by the Senate shall be embodied in a report prepared by the Registrar or by a member of the committee, which report shall be laid before the committee for adoption or amendment. The report duly signed by the members of the committee, with notes of dissent, if any, shall be presented to the Senate at its next meeting, subject to the provisions of Regulation 5 respecting notice.

### ELECTIONS.

63. In all cases of election, other than those specially provided for, the candidates shall be proposed and seconded. If no more candidates are nominated than there are vacancies to be filled, the Chairman shall declare those candidates to be elected. If the number of candidates exceeds the number of vacancies, a vote shall be taken by ballot.

64. In the case of a single appointment, a ballot shall be taken, in which each Fellow shall only be entitled to give one vote, and the candidate or candidates receiving the smallest number of votes shall be withdrawn. Another ballot between the remaining candidates shall then be taken, and this procedure shall continue until the number of candidates is reduced to two. There shall then be a final ballot, and the candidate receiving the higher number of votes shall be considered to be duly elected. Provided that if at any stage of the ballot a candidate obtains an absolute majority of votes, the ballot shall cease.

If in any ballot, owing to an equality of votes all the candidates but one would be eliminated by this procedure, a fresh ballot shall be taken, and if a similar equality again occurs the Chairman shall give a casting vote.

If in any ballot there is an equality of votes among all the candidates, a fresh ballot shall be taken. If the equality be not removed the Chairman shall give a casting vote, and the candidate receiving this vote shall be regarded as duly elected; with this exception, it shall be necessary and sufficient condition for election that a candidate obtain an absolute majority of votes: and should this occur at any stage, the ballot shall cease.

65. In all cases of contested election for two or more appointments, each Fellow shall be entitled to give as many votes as there are appointments to be filled, but shall not give more than one vote for one person. The candidates who obtain the largest number of votes shall be elected, except when by reason of

equality of votes the number of such candidates is in excess of the number of appointments to be filled; in this case a fresh ballot shall be taken among those whose equality of votes has caused such excess. If the result of this ballot leaves the matter still undecided as to one or more of the appointments, the Chairman may decide who among the candidates found equal on the second ballot shall be appointed; or the Chairman may, at his discretion, give such directions for further ballot as the circumstances of the case may justify.

### PROTESTS.

66. Any Member of the Senate intending to protest against a resolution of the Senate shall give notice of his intention to the Registrar within a week from the date of the issue of the minutes of the meeting at which the Resolution was passed, and within one week thereafter lodge his protest with the Registrar. The Registrar shall thereupon forward the protest to the Chairman of the Meeting and request him to nominate three Fellows to form a committee to prepare a Memorandum in support of the Resolution, and the committee so nominated shall frame the Memorandum accordingly. The Registrar shall then cause the Protest and Memorandum to be printed and circulated to each Member of the Senate; they shall also be laid on the table at the next meeting of the Senate, and recorded in the minutes thereof.

If the Protest relates to a matter, the final decision of which rests with the Chancellor or with the Local Government of Bengal, the Registrar shall further submit the Protest and Memorandum, together with a copy of the Resolution, to the Chancellor or to the Local Government of Bengal, as the case may be, for his consideration and orders.

If a Protest has been lodged with the Registrar with reference to a Resolution which requires the confirmation of the Chancellor or of the Local Government of Bengal the Resolution shall not be sent up for confirmation except with the Protest and the Memorandum.

### RECONSIDERATION.

67. No matter which has been decided by the Senate shall, within a period of twelve months, be reconsidered, except—

At a special meeting of the Senate convened for the purpose upon the requisition of six Fellows.

And unless three-fourths of the members present at such meeting vote in favour of a reconsideration.

## MINUTES.

68. Within two weeks after a meeting of the Senate, a draft of the Minutes of such meeting shall be submitted to the Chairman and attested by him. The Minutes shall then be printed and circulated to all Members of the Senate, and such of them as were present shall, within a fortnight of the issue of the Minutes, communicate to the Registrar any exceptions they may take to the correctness thereof. The Minutes and the exceptions taken, if any, shall be laid before the next meeting of the Senate, and the Minutes in their final form shall then be confirmed. Once every twelve months, or at such other intervals as the Senate shall direct, the Syndicate shall cause the Minutes of the meetings of the Senate to be printed, and a copy thereof to be forwarded to each Fellow.

## GENERAL.

69. In any case not provided for by these Regulations, the Chairman shall give a ruling as to procedure on the principles already laid down.

70. Representatives of the Press and visitors may be admitted to meetings of the Senate, provided they have obtained the permission of the Registrar.

## CHAPTER II.

## VACANCIES ON THE SENATE.

1. In the first week of December, 1907, 1908, 1909, 1910, on such dates as may be determined by the Vice-Chancellor or the Senior Ordinary Fellow, as the case may be, a ballot shall be taken at the Senate House, with a view to determine who among the three classes of Ordinary Fellows mentioned in section 12, clause (l) of the Indian Uni-

versities Act should retire. The ballot shall be taken by the Registrar in the presence of the Vice-Chancellor or the Senior Ordinary Fellow, as the case may be. Every Ordinary Fellow shall be duly informed of the date and hour, and may, if he so desires, be present at the ballot. The Registrar shall forthwith intimate to the Chancellor the names of the retiring Fellows so determined.

The transaction of University business which is neither formal nor urgent shall, as far as practicable, be avoided, till the

vacancies thus caused are filled up, or intimation is received that they will not be filled up.

2. A register shall be kept by the Registrar of the date of appointment of every Ordinary Fellow, and of the date when he will cease to be a Fellow, under section 4, clause (2), or section 12, clause (n) of the Indian Universities Act. Not less than six weeks before the date of every approaching vacancy in a Fellowship, the Registrar shall intimate the fact to the Chancellor.

3. A register shall be kept of the attendance of every Ordinary Fellow at meetings of the Senate; and whenever it is ascertained that an Ordinary Fellow has not attended any meeting of the Senate, other than a Convocation, during the period of one year, the Registrar shall intimate the fact to the Chancellor with a view to enable him to take action, if he thinks fit, under section 11, sub-section (2) of the Indian Universities Act.

4. Except as otherwise provided, whenever the Registrar receives information that a vacancy has occurred on the Senate by reason of the retirement of a Fellow under section 3, Act II of 1857, or by death or resignation, or from any other cause, he shall forthwith intimate the fact to the Chancellor.

5. Whenever an Ordinary Fellow ceases to be such from any cause whatever, he shall vacate any University office or appointment held by him in his character as an Ordinary Fellow; and if he is re-elected or re-appointed a Fellow, he shall not again hold such office or appointment unless he is duly appointed thereto.

The same principle shall apply to added Members of Faculties.

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## CHAPTER III.

### THE FACULTIES.

1. There shall be five Faculties, namely: (1) Arts, (2) Science, (3) Law, (4) Medicine, and (5) Engineering.

A member of the Senate may belong to one or to two of the Faculties, but not to more than two, and need not necessarily belong to any.

2. Appointments to the Faculties shall be made by the Senate at the Annual Meeting. The Syndicate shall, in the first instance, draw up a list of Fellows whom they recommend for appointment to the various Faculties. They shall ordinarily recommend a Fellow for appointment to one Faculty only.



but may recommend a Fellow for appointment to two Faculties : Provided that in the latter case Fellows so recommended shall at no time exceed twenty. This list shall be circulated among the members of the Senate by the Registrar not less than sixteen clear days before the meeting. Any member of the Senate may then propose additional names for any of the Faculties, which must be sent to the Registrar nine clear days before the meeting. These names, together with the original list, shall be circulated among the members of the Senate seven clear days before the meeting and no additional names shall be received. The entire list shall be voted on, Faculty by Faculty, and every member shall be declared to be appointed who obtains votes from a majority of the members of the Senate voting for the Faculty under appointment. If any Fellow be appointed to more than two he must, on receiving intimation, declare to which Faculties he accepts appointment.

3. Between the dates of the Annual Meetings of the Senate the Syndicate shall have power to distribute any newly appointed Fellows to their appropriate Faculties and the Boards of Studies.

4. Each Faculty shall elect its Dean annually from its own number as soon as its members have been appointed.

If any Faculty omits to elect a Dean within one month of the Annual Meeting of the Senate, or if, in the event of the office of Dean being vacated, it fails to elect a new Dean within one month of the occurrence of the vacancy, the Vice-Chancellor may appoint a Dean. The Dean shall always be one of the Fellows belonging to the Faculty.

5. Each Faculty shall have the power to add to its own body a number of Graduates in that Faculty and other persons possessing special knowledge of the subjects of study represented by that Faculty, provided the number of members thus added shall not exceed half the number of Fellows appointed to that Faculty at the Annual Meeting of the Senate and shall in no case exceed ten. A person may belong to more than one Faculty as added member.

6. Such added members shall be elected annually at a special meeting of the Faculty called for the purpose, and the election shall take place in the following manner:—

- (a) The Dean shall, as soon as possible after the Annual Meeting of the Senate, convene a special meeting for the election of added members.
- (b) Each Fellow on the Faculty will on receipt of the notice of the meeting be entitled to propose the name of one person for appointment as an added member of the

Faculty. Such proposal must be accompanied by a brief written statement of the special qualifications of his nominee, and must reach the Registrar seven clear days before the meeting.

- (c) The Registrar shall cause a list of the nominees and the statements concerning them to be printed and forwarded to the Fellows concerned, four clear days before the meeting.
- (d) The voting shall be by ballot, and each Fellow on the Faculty shall be entitled to give one and one vote only for a candidate, but no Fellow shall have more votes than there are appointments to be filled. If the number of nominees does not exceed the limit prescribed by Regulation 5, any candidate, receiving the votes of a majority of the Fellows on the Faculty present at the special meeting (contemplated under the Section) and voting shall be held to be duly elected. If the number of nominees exceeds the above limit, those candidates shall be held to be duly elected who have obtained the highest number of votes for the number of appointments admissible, provided that, as before, each such candidate shall have secured the votes of a majority of the Fellows on the Faculty present at the special meeting (contemplated under the Section) and voting.
7. All members shall hold office till the next annual appointment of the Faculty by the Senate.
8. Added members shall have the right to take part in the ordinary business of the Faculty, and in any election of an Ordinary Fellow by the Faculty, but shall not  
Act VIII of 1904,  
sec. 14 (3). be entitled to take part in the election of the Syndicate.
9. Every meeting of a Faculty shall be convened by the Dean, or in his absence, or when the office of Dean is vacant by the Senior Ordinary Fellow belonging to the Faculty present in Calcutta.
10. The Dean, or in his absence, or when the office of Dean is vacant, the Senior Ordinary Fellow, belonging to the Faculty present in Calcutta, shall convene a meeting of the Faculty on the requisition of any three members.
11. Three clear days' notice shall be given of ordinary meetings of the Faculties. In the case of elections of members of the Syndicate, Fellows, added members and Boards of Studies, fifteen clear days' notice shall be given.
12. The quorum for the Faculty of Arts shall be ten, and for any other Faculty three.
13. Two or more Faculties may be called upon by the Senate or the Syndicate to meet together for the disposal of any

questions affecting more than one Faculty. In such cases the joint meeting shall elect its own Chairman.

14. The quorum of a joint Faculty meeting must include a full quorum of each Faculty represented, no member present being counted on more than one separate quorum.

15. It shall be the duty of a Faculty to consider and report on all matters referred to it by the Syndicate or the Senate, and a Faculty shall be at liberty to make recommendations to the Syndicate in all matters relating to the organization of University Examinations, Teaching, and Research in the Studies or subjects with which it is concerned, and to propose Regulations relating to these matters for the consideration of the Syndicate.

16. All elections shall be conducted in the same manner as those in the Senate, except as otherwise provided.

17. Within two weeks after a meeting of a Faculty, a draft of the Minutes of such meeting shall be submitted to the Chairman and attested by him. The Minutes shall then be printed and circulated to all members of the Faculty, and such of them as were present shall, within a fortnight of the issue of the Minutes, communicate to the Registrar any exception they may take to the correctness thereof. The minutes and the exceptions taken, if any, shall be laid before the next meeting of the Faculty, and the Minutes in their final form shall then be confirmed. Once every twelve months, or at such other intervals as the Senate shall direct, the Syndicate shall cause the minutes of the meetings of each Faculty to be printed and a copy thereof to be forwarded to each member of the Faculty concerned.

18. The rules for debate laid down in the Senate Regulations shall apply to the Faculties as far as is practicable, but the Chairman may relax their operation at his discretion.

19. The Dean shall ordinarily preside at meetings of a Faculty, and in the absence of the Dean the members present shall elect a Chairman.

## CHAPTER IV.

### THE SYNDICATE.

1. The executive government of the University is vested in the Syndicate, which shall consist of the Vice-Chancellor of the University as Chairman, and the Director of Public Instruction to the Government of Bengal for the time being as *ex-officio* member, and 15 of the *ex-officio* or Ordinary Fellows of

Act VIII of 1904,  
sec. 15 (1).

the University, who shall be elected for a period of one year, partly by the Senate and partly by the Faculties, as follows:—

Four by the Senate.

Four by the Faculty of Arts.

Two by the Faculty of Science.

Two by the Faculty of Law.

Two by the Faculty of Medicine.

One by the Faculty of Engineering.

The Syndics elected by any Faculty must be Fellows belonging to that Faculty.

2. The election by the Faculty shall take place at special meetings not less than three weeks before the Annual Meeting of the Senate. Notice of such meetings shall be issued by the Registrar, not less than fifteen clear days before the appointed date. Each Fellow on the Faculty will, on receipt of the notice, be entitled to propose the name of one person for appointment as member of the Syndicate. Such proposal must reach the Registrar seven clear days before the meeting. The Registrar shall cause a list of the nominees to be printed and forwarded to the Fellows concerned four clear days before the meeting. In any contested election the voting shall be by ballot and the procedure shall be the same as that laid down in paragraphs 63-65 of the Senate Regulations. As soon as members have been elected by any Faculty their names shall be notified by the Registrar to all members of the Senate.

3. The election by the Senate shall take place at the Annual Meeting. Not less than seven days before the meeting the names of members who are proposed by any Fellows for election shall be submitted in writing to the Registrar, who shall circulate the names to the members of the Senate at least four clear days before the meeting.

4. Of the fifteen members of the Syndicate so elected at least seven shall be either Heads of or Professors of Act VIII of 1901, in colleges affiliated to the University, and sec. 15 (2). of these Syndics at least two shall be elected by the Senate and at least five by the various Faculties:—

Three by the Faculty of Arts.

One by the Faculty of Science.

One by the Faculty of Medicine.

In any meeting for election such Syndics to the stated minimum number shall be elected first.

Fellows qualified for election under this Regulation are not debarred from election to the remaining places on the Syndicate.

*Explanation.*—A person who has been elected to a seat reserved for Heads of or Professors in Colleges affiliated to the University, shall, as soon as he ceases to be such Head or Professor, be deemed to have vacated his seat, and the electorate concerned shall proceed to fill up the vacancy by the election of a person possessing the necessary qualification."

5. If in the case of any election of a Fellow to the Syndicate the question is raised whether any person so elected is or is not a Professor within section 15, sub-section (2) of the Indian Universities Act, the question shall be decided by the Senate.

6. The Syndicate shall meet ordinarily once a month, and at other times when convened by the Vice-Chancellor, or in his absence from Calcutta, or when the office of Vice-Chancellor should happen to be vacant, by the Senior Member of the Syndicate present in Calcutta. Whenever an emergency arises and there is not time to summon a meeting of the Syndicate the Vice-Chancellor may take such immediate action as he deems necessary. The nature of the emergency and the action taken to meet it shall be reported by the Registrar at the next meeting of the Syndicate.

7. The Syndicate shall have power to appoint committees from among its own members, and to add to such committees any Ordinary Fellow of the University and any added member of a Faculty. The reports of such committees must be considered by the Syndicate as a whole before being published or acted upon.

8. All members of the Syndicate must ordinarily be resident in or near Calcutta. If any member is temporarily absent from his residence, the Vice-Chancellor or the Dean of his Faculty, as the case may be, may appoint a member possessing the necessary qualifications to officiate during his absence. Should the period of absence exceed three months, the Vice-Chancellor may declare his place vacant.

9. On every vacancy in the Syndicate caused by death or resignation, or otherwise, the Senate or the Faculty, as the case may be, shall proceed to elect a new member for the remainder of the term for which the original member had been elected.

10. If the Senate or the Faculty omits to elect a member of the Syndicate within one month after a vacancy occurs, the Vice-Chancellor may appoint a person possessing the necessary qualifications.

11. Seven members of the Syndicate shall constitute a quorum, and all questions shall be decided by a majority of the votes of the members present. The Vice-Chancellor, or, in his absence, the Senior Fellow present, shall preside at all meetings of the Syndicate, and if the votes, including that of the President, are equally divided, the President shall have a casting vote.

12. It shall be the duty of the Syndicate to consider and report upon matters to be submitted to the Senate; to appoint, and if necessary to remove the Examiners and all other officers of the University, in regard to whom this power is conferred by

the Regulations; to make rules for the conduct of examinations in conformity with the Regulations and to fix the time at which they shall be held; to recommend to the Senate the grant of degrees, honours and rewards; to administer the funds and to keep the accounts of the University; to correspond on the business of the University with the Government and all other authorities and persons; and, generally, to conduct the affairs of the University in accordance with the Acts of Incorporation and the Indian Universities Act, the Regulations, and the Resolutions of the Senate and the Syndicate.

13. The Syndicate may from time to time recommend to the Senate such Regulations as may seem desirable.

14. Each Faculty shall report on any subject that may be referred to it by the Syndicate. Any Faculty, or any member or number of members of the Senate, may make any recommendation to the Syndicate and may propose any Regulation for the consideration of the Syndicate.

15. The decision of the Syndicate on any such recommendation or proposition or on any matter whatever, may be brought before the Senate by any member of the Senate at one of its meetings, and the Senate may approve, revise, or modify any such decision or may direct the Syndicate to review it; provided that no matter directly concerning any particular Faculty shall be disposed of by the Syndicate or the Senate without having been referred to that Faculty for opinion.

16. All questions as to affiliation or disaffiliation of Colleges or the continuation of affiliation granted to Colleges or to the courses of instruction which such Colleges will be allowed to adopt for the purposes of University examinations, or to the inspection of and report on the condition of Colleges, shall be dealt with by the Syndicate in accordance with sections 20, 21, 22, 23 and 24 of the Indian Universities Act.

17. All questions as to the recognition of or the withdrawal of recognition from, or the conditions required for the continuance of recognition of schools shall be dealt with by the Syndicate under the Regulations prepared under section 25 (2) (c) of the Indian Universities Act.

18. Whenever practicable, the Syndicate may with the sanction of the Senate and from the funds of the University or any other funds placed at the disposal of the University for the purpose, institute scholarships for post-graduate study or studentships for research in literary or scientific subjects. The conditions governing their award and tenure shall be laid down from time to time by the Senate.

19. With a view to encourage research in vernacular literature and languages, and foster their growth, the Syndicate may,

with the sanction of the Senate, provide grants, prizes or scholarships for—

- (a) critical editions of early vernacular text;
- (b) historical investigations of the origins of vernacular literatures and their early development;
- (c) philological investigations of Indian vernaculars and their dialects.

20. The minutes of the Syndicate having been duly confirmed shall be printed and circulated at once to the members of the Senate.

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## CHAPTER V.

### BOARDS OF STUDIES.

1. There shall be Boards of Studies in the following branches of knowledge :—

- (1) English.
- (2) Greek, Latin, French, German and Armenian.
- (3) Sanskrit.
- (4) Sanskrit Languages.
- (5) Hebrew.
- (6) Arabic, Persian and Urdu.
- (7) History.
- (8) Economics and Political Philosophy.
- (9) Mental and Moral Philosophy.
- (10) Chemistry.
- (11) Experimental and Mathematical Physics.
- (12) Zoology.
- (13) Geology and Mineralogy.
- (14) Botany.
- (15) Physiology.
- (16) Experimental Psychology.
- (17) Mathematics.
- (18) Geography.
- (19) Teaching.
- (20) Law.
- (21) Medicine.
- (22) Engineering.

The Boards shall be respectively appointed by the Faculties as follows :—

Boards 1—9 shall be appointed by the Faculty of Arts.

Boards 10—15 shall be appointed by the Faculty of Science.  
Boards 16—19 shall be appointed by the Faculties of Arts and Science.

Board 20 shall be appointed by the Faculty of Law.

Board 21 shall be appointed by the Faculty of Medicine.

Board 22 shall be appointed by the Faculty of Engineering.

2. The members of a Board shall be teachers of or Examiners in, or other persons who have a special knowledge of the subject or subjects with which the Board is concerned.

3. No Board shall consist of fewer than three or of more than twelve members.

4. The members of the respective Boards shall be appointed by the Faculty or Faculties as provided in Regulation I from among their own members (including added members), and shall severally hold office for one year from the date of appointment. They shall be eligible for re-appointment. No member shall belong to more than five Boards.

5. The Boards of Studies shall be elected annually at a special meeting of the Faculty called for the purpose, and the election shall take place in the following manner:—

(a) The Dean of each Faculty shall as soon as possible, after the election of the added members convene a special meeting for the appointment of the Boards.

(b) Each Member of a Faculty will, on receipt of a notice of the meeting, be entitled to propose not more than twelve members of the same Faculty for appointment to each of the Boards under that Faculty. The list of members proposed by him must reach the Registrar seven clear days before the meeting.

(c) The Registrar shall cause a list of the nominees to be printed and forwarded to the Fellows concerned, four clear days before the meeting.

(d) In any contested election the voting shall be by ballot and the procedure laid down in the Senate Regulations 63-65 shall be followed.

6. Where two or more Faculties have to appoint a Board they shall appoint the members thereof in the proportion assigned to them by the Syndicate previous to such appointment.

7. Each Board shall elect its own President. Every meeting of a Board shall be convened by its President or, in his absence, by the Senior Fellow belonging to that Board. Three members shall constitute a quorum. The President of a Board, or, in his absence, the Senior Fellow belonging to the Board shall convene a special meeting of the Board on the requisition of two or more members of the Board.



8. The duties of each Board shall be—

- (i) to recommend to the Syndicate courses of study for the various examinations of the University in the subject with which the Board is concerned;
- (ii) to recommend to the Syndicate, for the guidance of teachers and students, books in which the prescribed subjects are suitably treated; and to recommend text-books when such are required: provided that no book or text-book shall be recommended by a Board unless on the written report of some competent person who has read it, which report shall be forwarded to the Syndicate;
- (iii) to consider at the request of the Syndicate, the reports of the Examiners in the subjects with which the Board is concerned, and to frame such recommendations regarding methods of teaching, study and examination as may seem necessary in the interests of education;
- (iv) to furnish the Syndicate with the names of persons competent to act as Examiners in the subjects with which the Board is concerned; and
- (v) to consider and report upon all such matters as may be referred to it by the Syndicate, the Faculties by which its members are appointed, or the Senate.

9. Two or more Boards may be called upon by the Syndicate or the Senate to meet together for the disposal of any questions affecting more than one Board. In such cases the joint meeting shall elect its own President. The quorum of a joint Board meeting must include a full quorum of each Board represented, no member present being counted on more than one separate quorum.

10. All meetings of the Boards shall be convened through the Registrar, who will keep a record of the proceedings of the meetings.

11. Meetings of Boards shall be presided over by the President of the Board; in the absence of the President, the members present shall elect a Chairman.

## CHAPTER VI.

### BOARD OF ACCOUNTS.

1. A Board of Accounts consisting of three Fellows, not being members of the Syndicate, shall be appointed by the Senate at its Annual Meeting.

2. The Board shall meet ordinarily once in three months, and at other times when convened by the Vice-Chancellor. The three members shall constitute a quorum.

3. The Board shall prepare the University Budget, examine and audit the University accounts and the accounts of the Endowments and Trust Funds, consider ways and means and the financial effects of any important measures in contemplation, and make recommendations, when necessary, to the Syndicate on all matters relating to the finances of the University. It shall also make an annual report to the Senate on the special features of the finances of the last preceding year.

4. Members of the Board shall hold office until the next Annual Meeting of the Senate. They shall be eligible for re-appointment at the expiration of their term of office. All vacancies in the Board occurring in the course of the year shall be filled up by the Syndicate.

## CHAPTER VII.

### REGISTRAR.

1. The Registrar shall be appointed by the Senate and only at an Annual Meeting. He shall be appointed for five years only or for such shorter term as the Senate may, for special reasons, determine but at the end of every such term he may be re-appointed. The term of office of the Registrar shall commence on the first day of April next following his election: Provided that the first appointment shall be made within six months after these Regulations come into effect. If a vacancy occurs in the office of Registrar between two Annual Meetings of the Senate, the Syndicate shall appoint a person to officiate until the first day of April following the next Annual Meeting.

2. The Registrar shall be a graduate of position with experience of University affairs. He shall be a whole-time officer. He may be a member of the Senate, but shall not be a member of the Syndicate. His salary shall be Rs. 800 per mensem, rising to Rs. 1,000 in five years by four annual increments of Rs. 50.

3. It shall be competent to the Syndicate to grant to the Registrar, on full pay, leave of absence for one month in a year or for an accumulated period not exceeding four months in five years. It shall also be competent to the Syndicate to grant him, on half pay, leave of absence which may be added to the period

of leave on full pay for a period not exceeding eight months in five years.

The Syndicate shall make arrangements for the discharge of his duties during his absence.

4. The duties of the Registrar shall be as follows:—

- (a) To be the custodian of the Records, Library, Common Seal, and such other property of the University as the Syndicate shall commit to his charge.
- (b) To act as Secretary to the Syndicate and to attend all Meetings of the Senate, Faculties, Syndicate, Boards of Studies, Board of Accounts, Boards of Examiners, and any Committee appointed by the Senate, the Faculties, the Syndicate, or any of the Boards, and to keep Minutes thereof.
- (c) To conduct the official correspondence of the Syndicate and the Senate.
- (d) To issue all notices convening meetings of the Senate, Faculties, Syndicate, Boards of Studies, Board of Accounts, Boards of Examiners, and any Committees appointed by the Senate, the Faculties, the Syndicate, or any of the Boards.
- (e) To perform such other work as may be, from time to time, prescribed by the Syndicate, and generally to render such assistance as may be desired by the Vice-Chancellor in the performance of his official duties.

Any duty which, under the Regulations, is required to be performed by the Registrar in respect of any matter connected with examinations, may, by order of the Senate, be performed by a Special Officer\*:

Provided that all matters relating to examinations required to be placed before the Syndicate shall be transmitted by the Special Officer to the Registrar, as sole Secretary to the Syndicate.

When an order has been made in this behalf by the Senate, the Syndicate may commit to the charge of the Special Officer all records connected with University Examinations, including question and answer papers, mark-sheets, Examination rolls, Certificates and Diplomas, applications for admission to the Examinations and the like.

5. It shall be competent to the Syndicate to grant to the Registrar a gratuity or pension regulated as follows:—

- (a) After a service of less than ten years, a gratuity not exceeding one month's salary for each completed year of service.

\* The Senate have appointed a Controller of Examinations for this purpose. For Controller's duties, etc., *vide* Appendix C.

(b) After a service of not less than ten years, up to 25 years, a pension not exceeding one-sixtieth of the average salary (i.e., the average calculated upon the last three years of service) multiplied by the number of years of completed service. The pension shall in no case exceed Rs. 5,000 per annum.

6. In case of misconduct or neglect of duty, the Registrar shall be liable to suspension by the Syndicate, and to dismissal by the Senate on the report of the Syndicate.

7. There shall be a permanent Assistant Registrar, who shall be a graduate of the Calcutta University, and a permanent staff of subordinate assistants and servants. The Syndicate shall have power to appoint them, to dismiss them for misconduct or neglect of duty to dispense with their services for any sufficient reason, and to determine their number and scale of pay. It shall be competent to the Syndicate to grant them gratuities or pensions regulated as in paragraph 5. It shall also be competent to the Syndicate to grant them, on full pay, leave of absence for one month for every eleven completed months of duty the amount of such leave admissible at one time being limited to three months. It shall further be competent to the Syndicate to grant them, on half pay, leave of absence on medical certificate for a period not exceeding three months at a time, nor exceeding six months in five years.

## CHAPTER VIII.

### INSPECTOR OF COLLEGES.

1. For the purpose of inspecting affiliated Colleges a salaried Inspector shall be appointed. The appointment shall be made by the Senate and only at an Annual Meeting, and shall be subject to the approval of Government. He shall be appointed in the first instance for five years, but at the end of every such term he may be re-appointed. If a vacancy occurs in the office of Inspector, the Syndicate shall appoint a person to officiate until the next Annual Meeting of the Senate.

2. The Inspector of Colleges shall be a person of high academic standing and one possessing some experience of Indian Colleges. He shall be a whole-time officer of the University. His pay, leave and pension shall be on the same terms and conditions as those of the Registrar. He may be a Fellow of the University but must not be a member of the Syndicate. The duties of the Inspector of Colleges shall be—

(a) to report on Colleges applying for affiliation;

- (b) to inspect affiliated Colleges; and
- (c) to inspect such schools as may from time to time be indicated by the Syndicate.

## CHAPTER IX.

### UNIVERSITY PROFESSORS.

1. When the funds of the University permit, the Senate with the previous consent of the Government shall found such Professorships as it may think fit, prescribe the conditions on which they shall be tenable and provide in connection therewith lecture-rooms, libraries, museums, laboratories, workshops and other facilities for teaching and research.

2. The Senate shall likewise found and endow Professorships on particular subjects, from funds specially given or bequeathed for the endowment of such Professorships or, if it thinks fit, accept endowments of such Professorships, made by individual or corporate donors.

3. The Senate shall appoint and shall, subject to the conditions annexed to the tenure of any Professorship have power to remove the Professors of the University. The Senate shall in the same manner appoint Assistant Professors, prescribe their duties and remuneration, and have power to dismiss them if necessary.

4. Demonstrators and other Assistants shall from time to time be assigned to Professors, and Assistant Professors, subject to such conditions with regard to manner of appointment, tenure of office, duties and remuneration as shall be prescribed by the Senate.

5. The Senate shall from time to time make rules fixing the fees, if any, to be paid by the students attending the classes of Professors and Assistant Professors, and the money thus collected in fees shall be the property of the University.

6. Professors and Assistant Professors shall lecture or otherwise teach in such places as shall be from time to time determined by the Senate.

7. The Senate shall make rules for the retirement of, as well as the grant of bonuses and pensions to, Professors, Assistant Professors, Demonstrators and other Assistants.

8. In appointing a Professor or Assistant Professor of the University the Senate shall specify the subject, that is to say, the branch or branches of knowledge for which he is appointed.

He shall be authorised to lecture only in the subject or subjects indicated.

9. Endowed Professorships already accepted by the Senate shall, subject to the conditions of the endowment, be governed by these Regulations.

10. No University Professor shall be appointed without the sanction of the Government.

## CHAPTER X.

### UNIVERSITY READERS.

1. A certain sum, whenever practicable, shall be set apart annually from the University income or from any funds specially provided for the purpose by Government or other donors, for the purpose of providing special courses of lectures on particular subjects. These lectures shall be delivered generally during the cold weather months, and will be intended mainly for the benefit of graduates engaged in research work or of those who wish to prosecute special studies. The lecturers delivering such courses of lectures shall be called University Readers.

2. The appointment of a Reader in any subject shall be made by the Senate on the recommendation of the Syndicate.

3. Readers shall lecture in such places as may be from time to time determined by the Senate.

4. The fee for a course of lectures under Section 1 shall from time to time be fixed by the Syndicate, and the money thus collected in fees shall be the property of the University.

5. A Reader appointed under Section 1 shall ordinarily receive an honorarium of Rs. 2,000 for a course of lectures, but in special cases this fee may be increased.

6. The Senate on the recommendation of the Syndicate shall from time to time allot funds to meet the remuneration of Demonstrators and Assistants as well as any general expenditure which may be incurred in connection with these lectures.

7. Courses of lectures delivered under Regulation 1 shall be printed and published at the expense of the University.

8. No University Reader shall be appointed without the sanction of the Government.

## CHAPTER XI.

## UNIVERSITY LECTURERS.

1. The University shall provide for Post-Graduate Teaching, study and research in the Faculties of Arts and Science.

*Explanation.*—The term "Post-Graduate," as used in this chapter, has reference only to the examinations for the degrees of Master of Arts and Master of Science (Chapters XXXIII and XXXVII).

## Part I.

## Post-Graduate Teaching in Calcutta.

2. Post-Graduate Teaching in Calcutta shall be conducted only in the name and under the control of the University; for this purpose two Councils shall be constituted, namely, the Council of Post-Graduate Teaching in Arts, and the Council of Post-Graduate Teaching in Science.

3. The staff for Post-Graduate Teaching in Calcutta will consist of (a) teachers appointed and paid by the University; (b) teachers whose services are, on the application of the University, lent from time to time by the Local or Imperial Government or by a private institution, and who during the time they work under the University, are University officers; (c) teachers in colleges, whose attainments specially qualify them for Post-Graduate instruction and who undertake, at the request of the University and for a remuneration decided on by it, to deliver a course of lectures on selected topics; Teachers in Colleges whose attainments specially qualify them for Post-Graduate work, and who shall be recognised by the University as Extra-Mural Lecturers; (d) persons, engaged in other than educational work who undertake, at the request of the University and for a remuneration decided on by it, to deal with special subjects in which they are authorities.

Extra-Mural lecturers shall be recommended annually by their Colleges for recognition by the University. Such recommendations, along with a statement, showing, at the time of the first recognition, their qualifications, and outlining the proposed course of lectures for the ensuing session, shall reach the University not later than February 15th in each year. Such proposals shall be placed before the Board of Higher Studies and the Executive Committee concerned, the selection to be finally made by the Board of Appointments. Lecturers thus recognised by the University shall undertake to deliver in their own Colleges a minimum of twenty lectures in each session, and such lectures shall be opened both to the Post-Graduate students of the College

concerned and to such other Post-Graduate students as may desire to attend. Attendance at such lectures shall not be obligatory but shall be reckoned as alternative to not more than twenty per cent. of the total number of lectures delivered by the University Professors or Lecturers appointed under section 3 (a), (b), (c) and (d) and to this extent shall be regarded as constituting part of the regular course of study qualifying for admission to the M.A. or M.Sc. Examination. The question of remuneration of such lecturer and tuition fees to be paid by students who attend such lectures shall be settled by the Executive Committee in consultation with the Colleges.

#### POST-GRADUATE TEACHING IN ARTS.

4. The Council of Post-Graduate Teaching in Arts in Calcutta shall be composed as follows:—

(a) All persons appointed teachers for Post-Graduate instruction in Arts, under Section 3; such teachers will be members *ex-officio* :

(b) Four members annually appointed by the Senate :

(c) Two members annually appointed by the Faculty of Arts :

(d) Heads of all colleges in Calcutta affiliated to the B.A. standard: Provided that for the purpose of the constitution of the first Council, under these Regulations, the persons mentioned in clause (a) shall be deemed to include all teachers, who, on the date of commencement of these Regulations are engaged, either under the University or in an affiliated college in Calcutta, in Post-Graduate work in Arts.

*Explanation.*—No person shall be deemed to be a “teacher” within the meaning of clause (a) of this section, unless he performs independent teaching work in the Post-Graduate classes. If a question arises as to whether a member of the staff is a “teacher” for the purposes of this rule, the matter shall be referred to the Senate for decision.

5. The Council of Post-Graduate Teaching in Arts shall annually elect its own President.

6. As soon as possible, after the constitution of the Council, an Executive Committee thereof shall be annually formed as follows:—

(a) Two representatives of each of the following branches of study :

(i) English.

(ii) Sanskrit and Pali.

(iii) Arabic, Persian, Hebrew and Syriac.

(iii) (a) Indian Vernaculars and Comparative Philology.

(iv) Mental and Moral Philosophy and Experimental Psychology.

(v) History.



- (vi) Political Economy, Political Philosophy and Commerce.
- (vii) Pure Mathematics.
- (viii) Anthropology.

The representatives of each subject or group of subjects shall be elected by the staff in the subject or subjects concerned from amongst themselves :

Provided that no member of the staff, except a University Professor, shall be eligible for election to the Executive Committee, unless he is a graduate of at least seven years' standing.

(b) Two members, selected by the Senate from its nominees on the Council.

(c) One member, selected by the Faculty of Arts from its nominees on the Council.

The President of the Council shall be *ex-officio* President of the Executive Committee.

7. There shall be a salaried and whole-time Secretary to the Council and its Executive Committee. The appointment shall be made and the salary fixed by the Senate, on the recommendation of the Council through the Syndicate with the remarks of the Syndicate. The Secretary shall be assisted by such office establishment as may be found necessary from time to time.

8. Boards of Higher Studies shall be constituted annually in each of the following subjects, as soon as possible after the constitution of the Council :

- (i) English.
- (ii) Sanskrit.
- (iii) Pali.
- (iv) Arabic and Persian.
- (v) Hebrew and Syriac.
- (v) (a) Indian Vernaculars.
- (vi) Comparative Philology.
- (vii) Mental and Moral Philosophy.
- (viii) Experimental Psychology.
- (ix) History.
- (x) Political Economy and Political Philosophy.
- (x) (a) Commerce.
- (xi) Pure Mathematics.
- (xii) Anthropology.
- (xiii) Latin.

9. The Board of Higher Studies in each subject or group of subjects shall consist of—

(a) Teachers of that subject or group of subjects appointed under Section 3; such teachers shall be members *ex-officio*.

(b) Three persons selected by the Council from amongst its members.

(c) Not more than two members co-opted by the persons mentioned in clauses (a) and (b) from amongst those engaged

in Post-Graduate teaching in the subject concerned in places outside Calcutta.

10. Each Board of Higher Studies shall elect its own Chairman, from year to year :

Provided that no person, except a University Professor, shall be eligible for election as Chairman of a Board, unless he is a graduate of at least seven years' standing.

It shall be the duty of the Chairman of each Board to supervise generally the teaching arrangements in that Department and to ensure compliance with the resolutions of the Board, the Executive Committee and the Council in that behalf.

11. The Council mentioned in Section 4 is vested with authority subject to the ultimate control of the Senate (communicated by the Syndicate), to deal with all questions relating to the organisation and management of Post-Graduate Teaching in Arts in Calcutta.

The Executive Committee of the Council will receive and consider reports from the Boards of Higher Studies as to the progress made in their respective subjects and the results of the examinations, and will exercise such supervision and give such direction as may be necessary to ensure regularity of work and maintenance of discipline among the students.

12. The Board of Higher Studies in each subject shall, for purposes of Post-graduate teaching and Post-graduate examination, make proposals regarding—

- (a) courses of study;
- (b) text-books or recommended books;
- (c) standards and conduct of examinations;
- (d) teaching requirements from year to year and preparation of the time-table;
- (e) distribution of work among the members of the staff in that department;
- (f) appointment of Examiners; and
- (g) such other matters as may, from time to time, be specified by the Council with the approval of the Senate.

Proceedings of the Boards of Higher Studies shall be subject to confirmation, revision or modification by the Executive Committee which shall also have the power to send such proceedings back to the Board of Higher Studies for further consideration.

Proceedings of the Executive Committee, except as otherwise provided for, shall be subject to confirmation, revision or modification by the Council which shall also have the power to send such proceedings back to the Executive Committee for further consideration.

Proceedings of the Council shall be transmitted to the Senate through the Syndicate with such observations, if any, as the Syndicate may deem necessary, and shall be subject to confirmation by the Senate.

The Council shall report on any subject that may be referred to it by the Senate. Any member, or any number of members, of the Senate may make any recommendation and may propose any regulations for the consideration of the Council. The Senate may, if necessary, direct the Council to review its decision on any matter.

13. Each Board of Higher Studies shall, not less than six months before the termination of the academic session, formulate the requirements of its special department during the ensuing session, together with an estimate of the probable financial cost. The Executive Committee, shall thereupon scrutinise the said requirements and elect a Committee called Budget Committee, consisting of the President and three members of the Executive Committee who shall in consultation with the University Board of Accounts prepare a consolidated budget. The budget shall then be placed before the Council for such observations as it may make. The budget, thereafter, should be forwarded to the University Board of Accounts to be laid with their comments thereupon before the Senate.

#### POST-GRADUATE TEACHING IN SCIENCE.

14. The Council of Post-Graduate Teaching in Science in Calcutta shall be composed as follows:

(a) All persons appointed teachers for Post-Graduate instruction in Science, under Section 3; such teachers shall be members *ex-officio*:

(b) Four members annually appointed by the Senate:

(c) Two members annually appointed by the Faculty of Science:

(d) Heads of all Colleges in Calcutta affiliated to the B.Sc. standard:

Provided that, for the purpose of the constitution of the first Council, under these Regulations, the persons mentioned in clause (a) shall be deemed to include all teachers, who, on the date of commencement of these Regulations, are engaged, either under the University or in an affiliated college in Calcutta, in Post-Graduate work in Science.

*Explanation.*—No person shall be deemed to be a "teacher" within the meaning of clause (a) of this section, unless he performs independent teaching work in the Post-Graduate classes. If a question arises as to whether a member of the staff is a "teacher" for the purposes of this rule, the matter shall be referred to the Senate for decision.

15. The Council of Post-Graduate Teaching in Science shall annually elect its own President.

16. As soon as possible after the constitution of the Council, an Executive Committee thereof shall be annually formed as follows:

(a) Two representatives of each of the following branches of study:

- (i) Applied Mathematics.
- (ii) Physics.
- (iii) Chemistry.
- (iv) Botany.
- (v) Physiology.

The representatives of each subject shall be elected by the staff in that subject from amongst themselves:

Provided that no member of the staff, except a University Professor, shall be eligible for election to the Executive Committee, unless he is a graduate of at least seven years' standing:

Provided further that in the case of Physics Chemistry and Botany one representative each shall be chosen from the University College of Science staff and the Presidency College staff.

*Note.*—Should arrangements be made at any time for instruction by the University in any branch of Science (other than those mentioned above), *e.g.*, Geology or Zoology, each such subject shall be represented on the Executive Committee by two members elected by the teachers in that subject from amongst themselves.

(b) Two members selected by the Senate from its nominees on the Council.

(c) One member selected by the Faculty of Science from its nominees on the Council.

The President of the Council shall be *ex-officio* President of the Executive Committee.

17. There shall be a salaried and whole-time Secretary to the Council and its Executive Committee. The appointment shall be made and the salary fixed by the Senate, on the recommendation of the Council through the Syndicate with the remarks of the Syndicate. The Secretary shall be assisted by such office establishment as may be found necessary from time to time.

18. Boards of Higher Studies shall be constituted annually in each of the following subjects, as soon as possible after the constitution of the Council:

- (i) Applied Mathematics.
- (ii) Physics.
- (iii) Chemistry.
- (iv) Botany.
- (v) Physiology.

*Note.*—Should arrangements be made at any time for instruction by the University in any branch of Science other than those mentioned above, *e.g.*, Geology or Zoology, a Board of Higher Studies in each such subject shall forthwith be constituted.

19. The Board of Higher Studies in each subject or group of subjects shall consist of—

(a) Teachers of that subject or group of subjects appointed under Section 3; such teachers shall be members *ex-officio*.

(b) Three persons selected by the Council from amongst its members.

(c) Not more than two members co-opted by the persons mentioned in clauses (a) and (b) from amongst those engaged in Post-Graduate Teaching in the subject concerned in places outside Calcutta.

20. Each Board of Higher Studies shall elect its own Chairman from year to year:

Provided that no person, except a University Professor, shall be eligible for election as Chairman of a Board, unless he is a graduate of at least seven years' standing.

It shall be the duty of the Chairman of each Board to super-vise generally the teaching arrangements in that department and to ensure compliance with the resolutions of the Board, the Executive Committee and the Council in that behalf.

21. The Council mentioned in Section 9 is vested with authority, subject to the ultimate control of the Senate (communicated by the Syndicate), to deal with all questions relating to the organisation and management of Post-Graduate Teaching in Science in Calcutta.

The Executive Committee of the Council shall receive and consider reports from the Boards of Higher Studies as to the progress made in their respective subjects and the results of the examinations and shall exercise such supervision and give such directions as may be necessary to ensure regularity of work and maintenance of discipline among the students.

22. The Board of Higher Studies in each subject shall, for purposes of Post-graduate teaching and Post-graduate examination, make proposals regarding:—

- (a) courses of study;
- (b) text-books or recommended books;
- (c) standards and conduct of examinations;
- (d) teaching requirements from year to year and preparation of the time-table;
- (e) distribution of work among the members of the staff in that department;
- (f) appointment of examiners; and
- (g) such other matters as may, from time to time, be specified by the Council with the approval of the Senate.

Proceedings of the Boards of Higher Studies shall be subject to confirmation, revision or modification by the Executive Committee which shall also have the power to send such proceedings back to the Board of Higher Studies for further consideration.

Proceedings of the Executive Committee, except as otherwise provided for, shall be subject to confirmation, revision or modification by the Council which shall also have the power to send such proceedings back to the Executive Committee for further consideration.

Proceedings of the Council shall be transmitted to the Senate through the Syndicate with such observations, if any, as the Syndicate may deem necessary, and shall be subject to confirmation by the Senate.

The Council shall report on any subject that may be referred to it by the Senate. Any member, or any number of members, of the Senate may make any recommendation and may propose any regulations for the consideration of the Council. The Senate may, if necessary, direct the Council to review its decision on any matter.

23. Each Board of Higher Studies shall, not less than six months before the termination of the academic session, formulate the requirements of its special department, during the ensuing session, together with an estimate of the probable financial cost. The Executive Committee shall thereupon scrutinise the said requirements and elect a Committee called the Budget Committee consisting of the President and three members of the Executive Committee, who shall in consultation with the University Board of Accounts prepare a consolidated budget. The budget shall then be placed before the Council for such observations as it may make. The budget, thereafter, should be forwarded to the University Board of Accounts to be laid with their comments thereupon before the Senate.

#### APPOINTMENTS BOARD.

23A. All questions relating to appointments, tenure, pay, terms and conditions of service regarding the teaching staff under Chapter XI shall be referred by the Executive Committee of the Post-graduate Council concerned to an Appointments Board which shall hold office till 30th June, 1926, or for such short period, after that date, as the Senate may think necessary. The Appointments Board shall be constituted as follows :—

- (1) Vice-Chancellor, *President, ex-officio*;
- (2) President of the Council concerned, *i.e.*, the President of the Post-graduate Council in Arts in the case of an appointment in Arts Department and the

President of the Post-graduate Council in Science in the case of an appointment in the Science Department;

- (3) Chairman of one of the Boards mentioned, in sections 8 and 18 in case of an appointment relating to that particular Board;
- (4) One representative of the Board of Higher Studies concerned;
- (5) and (6) Two representatives of the Executive Committee concerned;
- (7) One representative of the Faculty of Arts in the case of an appointment in the Arts Department and one representative of the Faculty of Science in the case of an appointment in the Science Department;
- (8) and (9) Two representatives of the Syndicate one of whom shall be the head of or a Professor in an affiliated College;
- (10) and (11) Two representatives of the Senate one of whom shall be the head of or a Professor in an affiliated College;

Provided that the two representatives of affiliated Colleges, mentioned in the above two clauses, shall not be members of the staff of one and the same College;

- (12) President of the Board of Accounts.

The quorum for a meeting of the Appointments Board shall be fixed at 8.

The Appointments Board shall, whenever possible, co-opt not more than two members, not being members of the Senate and not in receipt of any salary from the University, on the ground of their special knowledge of, or interest in, the subject or subjects in which appointments shall be made by the said Board. The function of such members shall be to give advice, but they shall not vote at meetings of the said Board.

The Board of Higher Studies concerned shall recommend not more than two names for each of the appointments under the Board as sanctioned by the Senate, to the Executive Committee of the Post-graduate Council in Arts or Science, as the case may be, who shall thereupon consider such proposal and forward the name or names to the Appointments Board with its observations if any:

Provided always that the Executive Committee shall have the right to propose one additional name for each appointment if it deems necessary.

The final selection shall then be made by the Appointments Board whose choice shall not be limited by the recommendation or recommendations of the Board of Higher Studies or Executive Committee, but it shall be subject to confirmation by the

Senate, which shall have the power to send back the name or names proposed to the Appointments Board for review.

In case any Board of Higher Studies desires the creation of a new post not sanctioned by the Senate or, not provided for in the budget or in the case of abolition of any post, the Board of Higher Studies concerned shall make its recommendations to the Executive Committee, who shall thereupon consider such proposal in consultation with the Board of Accounts and forward its recommendation to the Senate for necessary orders. Provided always that the Executive Committee of the Post-graduate Council concerned may also recommend the creation of a new post in consultation with the Board of Higher Studies concerned.

## Part II.

### Post-Graduate Teaching outside Calcutta.

24. The Heads of Colleges outside Calcutta, not affiliated up to the M.A. or M.Sc. standard in a subject, may, from time to time, submit to the Registrar the names of Professors in their respective colleges who are prepared to deliver lectures on, and conduct classes for, research or advanced work for Post-Graduate courses of study in such subject.

25. The Syndicate shall place each name so recommended before the Board of Higher Studies concerned, and shall, after consideration of the report of the Board, recommend to the Senate lecturers for Post-Graduate courses of study. In recommending lecturers, for any course, the Syndicate shall have regard to (a) the qualifications of the applicant, (b) the desirability of avoiding an unnecessary multiplication of lecturers on the same subject in the same centre, and (c) in the case of Science subjects, the equipment for advanced practical work which can be provided.

26. The Senate shall have power, upon the recommendation of the Syndicate as aforesaid, to appoint such persons lecturers for Post-Graduate instruction. Such lecturers shall in the first instance be appointed for two years, but they shall be eligible for re-appointment for such term as the Senate may determine in each instance.

27. Every lecturer thus appointed or re-appointed must deliver at least 30 lectures in the course of the academical year.

28. If a lectureship becomes vacant before the expiry of the term of appointment, the Senate may, on the application of the college in which the lectureship is held, appoint a temporary



lecturer for the remainder of the original term. The procedure prescribed in Section 25 shall be followed in such cases.

29. Nothing in this Chapter shall be deemed to debar in any way the affiliation of colleges outside Calcutta to the standard of M.A. or M.Sc. Examination in any subject under the provisions of Chapter XVIII of the Regulations.

## Part III.

### General.

30. All persons other than University Professors, appointed under Sections 3, 25 and 27, shall be styled "University Lecturers."

31. The Board of Examiners in each subject for the M.A. and M.Sc. Examinations shall consist of

- (a) Internal Examiners, and
- (b) External Examiners.

The Internal Examiners in any subject shall be such of the members of the Board of Higher Studies in that subject as have been appointed teachers under Section 3. The External Examiners shall be appointed by the Executive Committee on the recommendation of the Board of Higher Studies concerned.

*Explanation.*—It is not intended that every member of the Board of Examiners thus constituted shall actually frame questions or examine answer-papers; this work shall be shared by the members of the Board in such manner as they may determine. But the results of the examinations in any subject shall be submitted to and reported upon, by the entire Board of Examiners in that subject.

32. No person whose salary is, or is to be, paid from funds supplied by the Government, shall be appointed or re-appointed University Lecturer, without the previous sanction of the Government. The names of all other persons appointed or re-appointed lecturers, shall be notified to the Local Government within one week from the date of the decision of the Senate. If, within six weeks from the receipt of such notification, the Government intimate to the University that a specified appointment is objectionable on other than academic grounds, such decision shall take effect and the appointment shall stand cancelled.

33. The Senate, on the recommendations of the Councils, shall, from time to time, frame rules, consistent with the Regulations, to facilitate the management of Post-Graduate Studies in Calcutta.

In particular, and without prejudice to the generality of the foregoing power, such rules may

- (a) define the duties of the President of a Council;
- (b) provide for the appointment of a Vice-President of a Council, and define his duties;
- (c) provide for the appointment of a teacher as Principal;
- (d) provide that teachers appointed under clauses (a) and (b) of Section 3 be attached to an affiliated college in Calcutta or participate in the work of instruction of Under-Graduate students of affiliated colleges, with the concurrence of the University, the colleges and the teachers concerned;
- (e) provide for the assignment of students to tutors and define their relation;
- (f) regulate the conditions of residence of Post-Graduate students;
- (g) provide that a Post-Graduate student, may, with the permission of the Principal of the college from which he graduated, continue to be a member of such college and that his name may be borne on its rolls;
- (h) provide for the due recognition of the association of a student with an affiliated college under the preceding clause or otherwise;
- (i) provide for joint-meetings of the Councils, Executive Committees and Boards of Higher Studies.

34. Notwithstanding the Regulations hereinbefore contained the name of a student of the Post-Graduate Classes in Calcutta may, with the permission of the Principal of the college from which he graduated, continue to be borne on the rolls of such college; and he may reside in the college hostel or attached mess, enjoy the benefit of the college library, laboratory and other like institutions, and receive assistance in his studies from the college staff. Such student, in so far as he is a member of the college, shall be subject, in matters of discipline, to the authority of the Principal.

A student of the Post-Graduate Classes in Calcutta, who is unable to attach himself to the college from which he graduated, may, with the sanction of the Executive Committee concerned, attach himself to another college, and thereupon, the provisions of the preceding paragraph shall apply to such student.

Students of the Post-Graduate Classes in Calcutta who are unable to attach themselves to a college under either of the preceding paragraphs, and who do not reside with their parents, guardians or families, shall be subject to such rules for their residence and control, as may from time to time be prescribed by the Senate, on the recommendations of the Councils.

35. Every student of the Post-Graduate Classes in Calcutta shall be assigned by the Board of Higher Studies in his subject

to a particular member of the staff as tutor. It shall be the duty of such tutors (in accordance with rules to be framed from time to time by the Senate on the recommendations of the Councils), to see their pupils singly or in groups at stated times. to advise them with regard to the lectures they should attend and to their courses of reading and practical work, and to assist them in any difficulties that they may encounter in their studies.

36. Nothing in these Regulations shall be deemed to authorise interference in any shape with the rights and obligations of the Governing Body of the Sir Taraknath Palit Trusts and the Board of Management of the Sir Rashbehary Ghose Endowment or with their control of the Sir Taraknath Palit Laboratory, or with the work of the Professors and other officers and scholarship-holders appointed under those endowments.

#### RULES OF PROCEDURE.

37. Each Council shall meet ordinarily four times a year, and on other occasions when convened by the President.

Each Board of Higher Studies shall meet ordinarily four times a year, and on other occasions, when convened by the Chairman.

A special meeting of a Council shall be convened on the requisition of six members; a special meeting of an Executive Committee, or of a Board of Higher Studies shall be convened on the requisition of three members.

38. At meetings of a Council and its Executive Committee, the President shall preside, and at a meeting of a Board of Higher Studies, the Chairman shall preside. In the absence of the President or Chairman, as the case may be, or when the office of President or Chairman is vacant, the members present shall elect a Chairman for the occasion.

39. Five clear days' notice shall be given for meetings of the Councils and of the Boards of Higher Studies; three clear days' notice shall be given for meetings of the Executive Committees.

40. The quorum for a meeting of a Council, an Executive Committee or a Board of Higher Studies shall be the number representing one-third of the members in each case.

41. The rules for debate contained in Chapter I of the Regulations shall apply to meetings of the Councils as far as is practicable, but the Chairman of the meeting may relax their operation at his discretion.

42. The election of members of the Executive Committees [as contemplated by clause (a) of Sections 6 and 15] shall take place at special meetings, of which fifteen clear days' notice shall

be given by the Secretary concerned. Each member of the staff will, on receipt of the notice, be entitled to propose the name of one person in his own department for election to the Executive Committee. Such proposals must reach the Secretary seven clear days before the meeting. The Secretary shall cause lists of the nominees to be printed and forwarded to the members concerned four clear days before the meeting. In any contested election, the voting shall be by ballot and the procedure shall be the same as that laid down in Sections 63-65 of Chapter I of the Regulations.

43. The procedure prescribed in the preceding section shall *mutatis mutandis*, be followed in the election and co-option of members of Boards of Higher Studies [as contemplated by clauses (b) and (c) of Sections 9 and 18]

44. If by reason of death, resignation, or like cause, a vacancy occurs in any of the Councils, Executive Committees or Boards of Higher Studies, between the dates of two annual elections, the Body concerned shall forthwith fill up the vacancy; and in such event, the same procedure shall be followed as in the case of an annual election

45. From the date of commencement of the Regulations contained in this chapter, a fund shall be constituted for the promotion of Post-Graduate studies, to be called, "The Post-Graduate Teaching Fund" To such fund there shall be annually credited

(a) grants from Government and benefactions made specifically for this purpose by donors;

(b) fees paid by students in the Post-Graduate classes;

(c) one-third of the fees realised from candidates for the Matriculation I A , I.Sc , B A and B.Sc. Examinations; and

(d) such other sums as the Senate may, from time to time, direct.

46. The powers conferred on the Councils, Executive Committees and Boards of Higher Studies by the provisions of this Chapter, shall be exercised by those Bodies respectively, in the manner and subject to the restrictions prescribed herein, and such power shall not be exercised by any other Bodies in the University.

## CHAPTER XII.

## ELECTION OF FELLOWS BY FACULTIES.

The following procedure shall be adopted in the election of Ordinary Fellows by Faculties under Section 9 of the Indian Universities Act:—

1. Once in every year, on such date as the Chancellor may appoint in this behalf, there shall, if necessary, be an election to fill any vacancy among the Ordinary Fellows elected by the Faculties. Such election shall take place at special meetings of the Faculties convened for the purpose.  
Act VIII of 1904,  
Sec. 9 (1).
2. An election under Regulation I shall be held, subject to such direction prescribing the qualifications of the persons to be elected as may, from time to time, be given by the Chancellor, with a view to secure the return of duly qualified persons and the fair representation of different branches of study in the Senate.  
Act VIII of 1904,  
Sec. 9 (2).
3. Elections of Ordinary Fellows by the Faculties shall be made in such manner as to secure that not less than two-fifths of the whole number of Fellows elected by the Faculties shall be persons following the profession of education.  
Act VIII of 1904  
Sec. 6 (4).
4. Names of candidates fulfilling the conditions prescribed under Regulation 2. must be proposed in writing by a Member of the Faculty which is to make the election. The nomination shall be in a form to be prescribed from time to time by the Syndicate, and shall reach the Registrar seven clear days before the date fixed for the election.  
 Each nomination must be accompanied by a brief written statement of the special qualifications of the nominee.  
 The Registrar shall cause a list of the nominees and the statements concerning them to be printed and forwarded to the Fellows concerned four clear days before the meeting.
5. The elections shall be held in accordance with Regulations 63, 64 and 65 of the Senate Regulations.
6. The election of any Fellow by a Faculty shall be subject to the approval of the Chancellor.  
Act VIII of 1904,  
Sec. 6 (3).
7. If, upon the election of an Ordinary Fellow by a Faculty objection is taken that the election has not been held in accordance with the Regulations framed for the purpose or the

directions given by the Chancellor, written notice of such objection shall be given to the Registrar within three days after the election; such notice shall specify the ground upon which the validity of the election is questioned. The Registrar shall place the notice before the Vice-Chancellor or the Senior Ordinary Fellow of the Senate, as the case may be, who shall, thereupon, convene a meeting of the Senate for the consideration of the matter on as early a date as practicable. The Senate, if satisfied that the election has not been held in substantial compliance with the Regulations or the directions given by the Chancellor under Section 9, Sub-section (2), may direct the Faculty to hold a new election or may give such other directions as may be necessary in the circumstances.

If notice of objection is given to the Registrar as provided by this Regulation, the name of the Fellow elected by the Faculty shall not be submitted to the Chancellor for approval under Section 6, Sub-section (3) of the Indian Universities Act till the matter has been considered by the Senate.

## CHAPTER XIII.

### ELECTION OF FELLOWS BY GRADUATES.

The following procedure shall be adopted in the election of Ordinary Fellows by Registered Graduates under Section 7 of the Indian Universities Act.

1. Once in every year, on such date as the Chancellor may appoint in this behalf, there shall, if necessary, be an election to fill any vacancy among the Ordinary Fellows to be elected by Registered Graduates.

Act VIII of 1904,  
Sec. 7 (1).

2. No person, unless his name has been entered in the register of Graduates and unless he has paid the fee for the year in which the election takes place, shall be qualified to vote or to be elected at any election held under Regulation I.

Act VIII of 1904.  
Sec. 7 (4).

3. Intimation of the date fixed for election shall be sent to Registered Graduates at least thirty-five clear days in advance, and each Registered Graduate will, on receipt of the notice, be entitled to propose the name of one person for appointment as a Fellow. Such proposal must be accompanied by a brief written statement of the special qualifications of his nominee, and must reach the Registrar twenty-one clear days before the date fixed for election. The Registrar shall cause a list of the nominees and of the statements to be printed and

forwarded' to the Registered Graduates, seventeen clear days before the date fixed for election.

4. Each voter shall have only one vote for each vacancy which is to be filled up and can give only one vote to any one candidate.

5. The votes shall be recorded and attested in such manner as the Syndicate may, from time to time, determine. The votes shall be recorded before the Registrar or reach him by such time on the day of election as the Syndicate may prescribe.

6. Those who obtain the highest number of votes will be declared elected. In the event of there being any tie between two or more candidates necessitating further selection, their names shall be reported to the Chancellor with whom the final selection shall rest.

7. The election of any Ordinary Fellow  
Act VIII of 1901,  
 Sec. 6 (?) by the Registered Graduates shall be subject to the approval of the Chancellor.

8. If, upon the election of an Ordinary Fellow by Registered Graduates, objection is taken that the election has not been held in accordance with the Regulations framed for the purpose, written notice of such objection shall be given to the Registrar within three days after the election. Such notice shall specify the ground upon which the validity of the election is questioned. The Registrar shall place the notice before the Vice-Chancellor, or the Senior Member of the Syndicate, as the case may be, who shall, thereupon, convene a meeting of the Syndicate for the consideration of the matter on as early a date as practicable. The Syndicate, if satisfied that the election has not been held in substantial compliance with the Regulations, may direct the Graduates to hold a new election, or may give such other direction as may be necessary in the circumstances.

If notice of objection is given to the Registrar as provided by this Regulation, the name of the Fellow elected by the Graduates shall not be submitted to the Chancellor for approval under Section 6, sub-section (3) of the Indian Universities Act till the matter has been considered by the Syndicate.

## CHAPTER XIV.

### REGISTER OF GRADUATES.

1. The Register of Graduates to be kept under section 7 (2) of the Indian Universities Act shall be in such form as the Syndicate may from time to time prescribe.

2. The initial fee payable by a Graduate for having his name entered on the Register shall be Rs. 10.

3. The fee payable by a Graduate for having his name retained on the Register shall be Rs. 10 a year. The annual fee shall cover the period from the 1st of April in the year in which it is paid till the 31st of March in the year following. Till such fee has been paid no Graduate shall be entitled to take part in any election or to enjoy any of the privileges conferred by these Regulations.

4. When a Graduate applies to have his name entered on the Register after the expiry of the limited time prescribed under section 7, sub-section (2) of the Indian Universities Act, he shall be liable to pay, in addition to the initial fee, a further sum of Rs. 10.

5. A Graduate whose name has been already entered on the Register may at any time compound for all subsequent payments of the annual fee by paying the sum of Rs. 150.

Act VIII of 1904.  
Sec. 7 (3).

6. The name of any Graduate entered on the Register shall, if the amount of the annual fee is not paid by the 30th of June, be removed therefrom, but shall at any time be re-entered on payment of all arrears.

Act VIII of 1904.  
Sec. 7 (3).

7. The day of the Convocation on which a person is entitled to be admitted to his degree, shall be deemed the day on which he has graduated or taken his degree.

8. Registered Graduates shall have, besides the right of electing Ordinary Fellows, the following privileges:—

Act VIII of 1904.  
Sec. 7 (5).

- (a) They shall be entitled to the use of the University Library on such special terms as may, from time to time, be prescribed by the Syndicate.
- (b) They shall be supplied with a copy of the University Calendar or such portions of it as the Syndicate may from time to time decide.
- (c) They shall be admitted free to all lectures delivered by University Professors and Readers.
- (d) They shall have priority of admission to the Convocation over unregistered Graduates.



## CHAPTER XV.

## REGISTER OF UNIVERSITY STUDENTS.

The Registrar shall maintain a Register of all students of the University, including graduates reading for a higher examination.

In this Register shall be entered the names of such persons only as have passed either the Entrance or the Matriculation Examination subject to the exception mentioned in Regulation 9 of this Chapter. There shall be recorded under the name of each registered student, the dates of admission to, and of leaving, any affiliated College. every pass or failure in a University examination with his roll number, every University scholarship, medal or prize won by the student, and every degree taken.

2. No person shall be deemed a "University student" unless and until his name has been duly entered in the Register and none but "University students" shall be eligible for admission to any University Examination other than the Entrance or Matriculation.

3. The Principal of every affiliated College shall forward to the Registrar the name of every student of the College within fourteen days of his admission. The Principal shall, at the same time, if necessary, forward the registration fee required by section 6.

When a student's name has been removed from the books of a College for any reason other than his having been sent up to a University Examination, the fact of its removal shall be immediately reported to the Registrar.

4. In the case of a student seeking registration, the Principal of the College to which he has been admitted, shall inform the Registrar of the date on which such student passed the Matriculation Examination and quote his roll number.

In the case of a student seeking registration, the Principal of the College to which he has been admitted, shall inform the Registrar of the date on which such student passed the Matriculation Examination and quote his roll number.

In the case of a registered student joining a College, the Principal shall quote such student's registered number.

5. On registration as a matriculated student every student shall be informed through his Principal of the registered number under which his name has been entered in the register, and that number shall be quoted in all subsequent reports concerning that student, and in all applications by that student to be admitted to a University Examination.

6. On matriculation every student shall be required to pay to the University a registration fee of two rupees, when his name is sent in by the Principal.

No further fee for registration shall be charged, unless a student's name is, on non-payment of fees, absence without notice or expulsion, struck off the books of a College, in which case he shall pay one rupee to have his name re-entered in the University Register.

7. All applications for admission to University Examinations shall be liable to be scrutinised by comparison with the University Register and the Registrar may refuse any application of any candidate about whom complete particulars have not been reported, until he has forwarded through his Principal a complete statement of the particulars which have not been properly reported.

8. Any registered student may, at any time, receive a certified copy of all entries under his name on payment of three rupees

9. Any person who applies for special permission to appear in an examination under the Regulations relating to non-collegiate students if he has been at any time matriculated in the University, shall quote his registered number, or if he has not been so matriculated, shall register his name as a matriculated student, paying the usual registration fee before he appears in the examination to which he seeks admission.

## CHAPTER XVI.

### NON-COLLEGIATE STUDENTS

1. No person who cannot produce a certificate from a college affiliated to the University to the effect that he has completed the course of instruction prescribed by the Regulations shall ordinarily be admitted as a candidate at any University Examination, other than an examination for Matriculation

2. Exception may be made in certain cases on the recommendation of the Syndicate, by special  
 Act VIII of 1904, order of the Senate. In each case the re-  
 Sec. 19. commendation must state special reasons why the privilege should be granted. A certificate shall be produced in such form as may be prescribed by the Syndicate.

3. Except in very special cases no person shall be admitted under the preceding Regulation who has been enrolled as a regular student of a College during the twelve months previous

to the date of the Examination at which he applies for permission to appear.

4. Before a candidate is permitted to present himself in any Science subject for which a practical course is necessary under the Regulations, he shall produce a certificate from the Principal of an affiliated College or some other authority approved by the Syndicate, to the effect that he has taken such a course in his laboratory.

5. Employment as a teacher shall not be regarded as a ground of recommendation unless the applicant has been employed for at least three years preceding the Examination in the exercise of his profession in, (1) a college affiliated to the University, or (2) a school recognised by the University as competent to send up candidates for the Matriculation Examination, or (3) any other School approved for the present purpose by the Syndicate.

6. Laboratory Assistants and Demonstrators and Librarians of Affiliated Colleges shall be treated as teachers.

7. The Syndicate shall have power in any case to admit to any University Examination in any Faculty any person who shall present a certificate from any Institution authorised to grant certificates by the Governor-General of India in Council, or by a local Government, or from such other Institutions as may be from time to time recognised for the purpose by the Syndicate, showing that he has attended courses of study, passed examinations, or taken degrees equivalent to those which are required in the case of students of the Calcutta University.

8. All non-collegiate students before they are admitted to a University Examination, shall satisfy the Syndicate by the production of a certificate as to (a) their good conduct, and (b) their diligent and regular study.

## CHAPTER XVII.

### FEMALE CANDIDATES.

#### *General.*

1. Female candidates, if they so desire, shall be examined in a separate place under the superintendence of ladies.

2. No Female candidate shall be admitted to any examination without presenting a certificate in such form as may be prescribed by the Syndicate.

3. All the Regulations for the examination of candidates shall apply to Female candidates except in so far as they are modified in the following Regulations or elsewhere:—

*Matriculation Examination.*

Female candidates shall be allowed to take up any language accepted by the Syndicate as a second language.

*Intermediate Examination in Arts or Science.*

(i) Female candidates may be admitted to this Examination without studying in an affiliated College, and Regulations 4 and 8 of Chapter XVI shall apply to them. No candidate, however, shall be allowed to present herself for this Examination until two years have elapsed from the time of her passing the Matriculation Examination.

(ii) Female candidates shall be allowed to take up any language accepted by the Syndicate as a second language.

*B.A. Examination.*

Female candidates may be admitted to the Examination without studying in any affiliated College, and Regulations 4 and 8 of Chapter XVI shall apply to them. But no candidate shall be allowed to present herself for this Examination until two years have elapsed from the time of her passing the Intermediate Examination in Arts.

## CHAPTER XVIII.

### AFFILIATION AND DISAFFILIATION OF COLLEGES.

1. Colleges or departments of Colleges may be affiliated in Arts, or a department of Arts, and similarly in Science, Law, Medicine and Engineering. The affiliation shall be given specifically for each separate subject and each separate standard in each of the Faculties.

2. The privilege of affiliation can only be conferred by the Government on the report of the Syndicate and the Senate. All applications for affiliation must be addressed through the Registrar to the Syndicate.

3. Only Colleges working within the territorial limits defined by the Governor-General in Council under section 27 of the

Indian Universities Act, 1904, which are assigned to this University, will be affiliated.

4. In the case of a Government College, application must be made by the Director of Public Instruction of the province in which the Institution is situated.

In the case of any other Institution application must be made by the Governing Body and submitted through the chief controlling authority, if any.

5. Every application must be countersigned by two Members of the Senate.

6. A College, applying for affiliation to the University, shall send a letter of application to the Registrar, and shall satisfy the Syndicate—  
 Act VIII of 1904.  
 Sec. 21 (1).

- (a) that the College is to be under the management of a regularly constituted Governing Body on which the teaching staff is represented;
- (b) that the character and qualifications of the teaching staff and the conditions governing their appointment and tenure of office, are such as to make due provision for the courses of instruction to be undertaken by the College;
- (c) that the buildings in which the College is to be located are suitable, and that provision will be made, in conformity with the Regulations, for the residence, in the College or in lodgings approved by the College, of students not residing with their parents or guardians, and for the supervision and physical welfare of students;
- (d) that due provision has been or will be made for a library;
- (e) where affiliation is sought in any branch of experimental science, that arrangements have been or will be made, in conformity with the Regulations, for imparting instruction in that branch of science in a properly equipped laboratory or museum;
- (f) that due provision will, so far as circumstances may permit, be made for the residence of the Head of the College and some members of the teaching staff in or near the College or the place provided for the residence of students;
- (g) that the financial resources of the College are such as to make due provision for its continued maintenance;
- (h) that the affiliation of the College, having regard to the provision made for students by other Colleges in the same neighbourhood, will not be injurious to the interests of education or discipline; and

- (i) that the College rules fixing the fees (if any) to be paid by the students have not been so framed as to involve such competition with any existing College in the same neighbourhood as would be injurious to the interests of education.

The application shall further contain an assurance that after the College is affiliated any transference of management and all changes in the teaching staff shall be forthwith reported to the Syndicate.

The application shall also contain an assurance that, except with the special permission of the Syndicate, no College professor or lecturer will be allowed to lecture to a class or section of a class which has on its rolls more than 150 students, and if two classes are combined, the joint number on the rolls shall likewise not exceed 150.

If any application for special permission is made, the Syndicate in dealing with it shall have regard to—

- (a) the nature of the subject;
- (b) the structure of the lecture-room and its accommodation;
- (c) the qualifications of the lecturer.

In the case of every application for affiliation of a College in any subject for the Examination of the degree of Master in the Faculty of Arts or of Science, a guarantee must be given that the course in which affiliation is sought will be adequately maintained for a period of at least four years.

Act VIII of 1904. 7. On receipt of a letter of application the Sec. 21 (2), (3) and (4). Syndicate shall—

- (a) direct a local inquiry to be made by a competent person authorized by the Syndicate in this behalf;
- (b) satisfy themselves that there is in the College building adequate accommodation both as regards the number of class-rooms, and the floor space and cubic space in each class-room;
- (c) make such further inquiry as may appear to them to be necessary; and
- (d) report to the Senate on the question whether the application should be granted or refused, either in whole or in part, embodying in such report the result of any inquiry under clauses (a), (b) and (c).

And the Senate shall after such further inquiry (if any) as may appear to them to be necessary, record their opinion on the matter.

The Registrar shall submit the application and all proceedings of the Syndicate and Senate relating thereto to the Government, who, after such further inquiry as may appear to them to be necessary, shall grant or refuse the application or any part thereof.

When the application or any part thereof is granted, the order of Government shall specify the courses of instruction in respect of which the College is affiliated; and when the application or any part thereof is refused, the grounds of such refusal shall be stated.

8. An application for affiliation may be withdrawn at any time before an order has been passed on the application by the Government.

Act VIII of 1904,  
Sec. 21 (5).

9. Where a College desires to add to the courses of instruction in respect of which it is affiliated, the procedure prescribed by Regulations 6 and 7 shall, so far as may be, be followed.

Act VIII of 1904,  
Sec. 22.

10. As a condition of the continuance of affiliation each affiliated College will be inspected from time to time by one or more competent persons authorised by the Syndicate in that behalf.

Act VIII of 1904,  
Sec. 23 (2).

11. The Syndicate may call upon any College so inspected to take, within a specified period, such action as may appear to them to be necessary in respect of any matter referred to in Regulation 6.

Act VIII of 1904,  
Sec. 23 (3).

12. The Senate may, on the recommendation of the Syndicate, submit, for the orders of the Government at any time, a proposal for the withdrawal of the privileges of affiliation from any College.

The procedure shall be as follows:—

(a) A member of the Syndicate who intends to move that the rights conferred on any College by affiliation be withdrawn, in whole or in part, shall give notice of his motion, and shall state in writing the grounds on which the motion is made.

Act VIII of 1904,  
Sec. 24 (1)-(6).

(b) Before taking the said motion into consideration, the Syndicate shall send a copy of the notice and written statement mentioned in (a) to the Head of the College concerned, together with an intimation that any representation in writing submitted within a period specified in such intimation on behalf of the College, will be considered by the Syndicate: Provided that the period so specified may, if necessary, be extended, from time to time, by the Syndicate.

(c) On receipt of the representation or on expiration of the period referred to in (b), the Syndicate, after considering the notice of motion, statement and representation, and after such inspection by any competent person authorized by the Syndicate in this behalf, and such further inquiry as may appear to them to be necessary, shall make a report to the Senate.

(d) On receipt of the report under (c), the Senate shall, after such further inquiry (if any) as may appear to them to be necessary, record their opinion on the matter.

(e) The Registrar shall submit the proposal and all proceedings of the Syndicate and Senate relating thereto to the Government, who, after such further inquiry (if any) as may appear to them to be necessary, shall make such order as the circumstances may, in their opinion, require.

(f) Where by an order made under (e) the rights conferred by affiliation are withdrawn, in whole or in part, the ground for such withdrawal shall be stated in the order.

13. If a College affiliated in any subjects for the M.A. or M.Sc. standard fails to maintain adequately for a period of four years the course in that subject, proceedings shall be taken, under the preceding section, to withdraw from the College the privileges of affiliation in that subject.

14. Each affiliated College shall furnish such returns, reports, and other information as the Syndicate may require to enable them to judge of the efficiency of the College.

Act VIII of 1904,  
Sec. 23.

## CHAPTER XIX.

### CONDITIONS TO BE FULFILLED BY COLLEGES AFFILIATED UNDER ACT II OF 1857.

1. Every College affiliated to the University before the passing of the Indian Universities Act, shall be entitled to exercise the rights conferred upon it by affiliation, till such rights are withdrawn or restricted in the exercise of any power conferred by that Act or by the Act of Incorporation.

Act VIII of 1904,  
Sec. 20.

For this purpose all Colleges affiliated up to the standard of the First Examination in Arts will be deemed qualified to impart instruction up to the standard of the Intermediate Examination in Arts, but not up to that of the Intermediate Examination in Science.

2. As soon as practicable, after the date on which these Regulations come into force, the Syndicate shall cause steps to be taken for the withdrawal of the rights conferred by affiliation from all Colleges situated beyond the territorial limits of the University as defined by the Governor-General in Council under section 27 of the Indian Universities Act.



For this purpose, the Syndicate shall ascertain whether any such College is preparing students for any examination of this University; and the date on which the withdrawal of the rights conferred by affiliation will take effect as regards any particular College shall be so regulated as not to prejudice the right of any student to appear at the examination for which he is actually reading in that College.

3. As soon as practicable after the date on which these Regulations come into force, the Registrar  
 Act VIII of 1901, shall forward a copy thereof to the authorities of each affiliated College situated within the territorial limits of the University as defined by the Governor-General in Council under section 27 of the Indian Universities Act, and invite them to furnish, within three months (or such further time as may be prescribed in any case by the Syndicate), information upon the following points:—

- (a) Whether the College is under the management of a regularly constituted governing body; if so, the names of its members and its constitution.
- (b) The names and qualifications of the teaching staff together with copies of their testimonials, and the conditions governing their appointment and tenure of office.
- (c) The size and situation of the College buildings, including the floor space and cubic space in each classroom.
- (d) Provision, if any, made for the residence of such of the students as do not reside with their parents or guardians.
- (e) Provision made for the residence of the Head of the College and of any member of the teaching staff, in or near the College or the place provided for the residence of the students.
- (f) Provision made for the supervision and physical welfare of the students.
- (g) Provision for a library, and the facilities given to students to make use of the library.
- (h) The courses of study, the subjects taught, the routine of work, and the arrangements for exercises and for tutorial assistance.
- (i) The courses of study which the College proposes to undertake in accordance with these Regulations, and the provision which will be made for such courses.
- (j) Where the College proposes to undertake instruction in any branch of experimental Science, what arrangements will be made for imparting instruction

in that branch of Science in a laboratory or museum,  
(i) by the delivery of lectures illustrated by experiments, and (ii) by enabling students to carry on practical work.

(k) The financial resources of the College.

(l) The College rules fixing the fees, if any.

4. If it appears in the case of any College that it has no regularly constituted governing body, or that it has a governing body upon which the teaching staff is not represented, the Syndicate shall call upon the chief controlling authority to place the College forthwith under the management of a regularly constituted governing body on which the teaching staff is represented.

5. The Syndicate shall obtain from each College an assurance—

(a) that any transference of management and all changes in the teaching staff will be forthwith reported to the Syndicate, and

(b) that from the beginning of the session following that in which these Regulations come into force, except with the special permission of the Syndicate, no Professor or Lecturer will be allowed to lecture to a class or section of a class which has on its rolls more than 154 students, and if two classes are combined the joint number on the rolls shall likewise not exceed 150.

6. The Syndicate shall cause each College referred to in Regulation 3, to be inspected in accordance with the Regulations framed in that behalf, and call upon the College inspected to take, within a specified period (which may be extended from

time to time at the discretion of the  
Act VIII of 1904, Syndicate) such action as may appear to  
Sec. 23 (3). them to be necessary with a view to secure its  
efficiency.

7. At the end of two years from the time when these Regulations come into force, the Syndicate shall submit to the Senate a report upon the condition of each affiliated College with a recommendation as to the subjects and standard in which such College shall be deemed to be affiliated. The matter shall be dealt with in accordance with the provisions of section 24 of the Indian Universities Act, and a report submitted to the Government, who may make such order as the circumstances of each case may require.

8. Each affiliated College shall furnish such returns, reports and other information as the Syndicate may require to enable them to judge of the efficiency of the College.

9. The preceding Regulations shall not apply to the School departments of affiliated Colleges.

## CHAPTER XX.

### INSPECTION OF AFFILIATED COLLEGES.

1. The inspection of Colleges shall be conducted jointly by the Inspector of Colleges and by one or two other persons who shall, from time to time, be appointed by the Syndicate to assist in the inspection of a College or a group of Colleges.

In the case of inspection of Colleges affiliated in Arts or Science, the additional Inspector or Inspectors shall be so chosen that both branches of study are represented, if necessary. In the case of Colleges affiliated in any branch of professional learning, the additional Inspector or Inspectors shall be specially qualified in that subject.

2. All Colleges shall be inspected once within eighteen months after the date when these Regulations come into operation. Thereafter every college shall be inspected at least once a year.

3. The report of the Inspectors shall deal with the following among other matters:—

- (a) The constitution of the Governing Body and the names of its members.
- (b) The suitability of the buildings and their neighbourhood, the accommodation for the students in attendance, the furniture, the lighting, the ventilation of the rooms, the drainage of the surrounding premises and the efficiency of the sanitary arrangements.
- (c) The names and qualifications of the teaching staff, the conditions governing their appointment and tenure of office, and the changes in the staff during the preceding year.
- (d) The provision made for the residence of the Head of the College and of the members of the teaching staff, in or near the College, or the place provided for the residence of students.
- (e) The adequacy of the Library, scientific apparatus, and other teaching appliances.
- (f) The courses of study, the subjects taught, the number of lectures delivered in each subject, the routine of work and the arrangements for exercises and for tutorial assistance, and the facilities given to students to make use of the Library.

- (g) The adequacy of the teaching staff.
  - (h) The strictness with which the College registers are kept and the transfer rules observed.
  - (i) The average monthly roll-number and the daily attendance of students during the last twelve months, as compared with the previous years.
  - (j) The results of University examinations.
  - (k) The state of discipline.
  - (l) The provision made for physical exercise.
  - (m) College clubs and other institutions for fostering Collegiate life.
  - (n) The extent and character of hostel accommodation, the degree of efficiency attained in the supervision of hostels and other lodgings for students; and the distance of such hostels and lodgings from the College premises.
4. The following books shall be kept by every College :—
- (a) An admission register, in such form as the Syndicate may from time to time prescribe.
  - (b) An attendance register.
  - (c) A student's conduct register showing fines exacted and other punishments.
  - (d) A register of the results of periodical examinations and class exercises.
  - (e) A register of Transfer Certificates issued and received.
  - (f) A cash-book.
  - (g) A book containing the proceedings of the Governing Body.

5. All the accounts, books, and other records of a College shall at all times be open to inspection and examination by any person or persons who may be deputed by the Syndicate for the purpose, provided that any information obtained from the inspection of the accounts shall be deemed confidential.

6. No inspection or examination under these Regulations shall have reference to religious instruction.

7. Every college shall furnish annually a return in such form as the Syndicate may from time to time prescribe.

## CHAPTER XXI.

### RECOGNITION OF SCHOOLS AND WITHDRAWAL THEREOF.

1. A school situated within the local limits assigned to the University of Calcutta by the Governor-General in Council

under section 27 of the Indian Universities Act, 1904, which is desirous of being recognised as a school competent to present candidates for the Matriculation Examination shall send a letter of application to the Registrar.

2. The school shall furnish a preliminary statement showing—

(a) That the school is under the management of a regularly constituted committee on which the teaching staff is represented, that proper provision is made for the continuance of the existence of such committee, and that the rules are such that the committee can exercise a necessary amount of control over the working of the school.

(b) That the qualifications, character and experience of the Head Master and the rest of the teaching staff are satisfactory, that due provision is made in respect of the number of teachers, and otherwise for carrying on all the courses of instruction in which the school desires to be recognised by the University as competent to present candidates for the Matriculation Examination, and that the conditions governing the tenure of the office of the Head Master and his staff are such as to render proper continuity of work possible.

(c) That the buildings in which the school is carried on are adapted for the purposes of a school, and are in proper sanitary condition, that the surroundings are suitable, and that the arrangements made in the buildings and in the furnishing of them are not likely to injure in any way the eyesight and general health of the pupils.

(d) That the accommodation is sufficient for the classes under instruction in the school.

(e) That the sanitary conveniences attached to the school are adequate and are kept in good order.

(f) That arrangements are made for the supply of good drinking-water to the pupils, and that facilities are provided to allow them to partake of refreshments.

(g) That due provision is made for the maintenance of a library and for lending out appropriate books (not school text books) for the use of pupils.

(h) That when recognition is sought in any branch of work, such as experimental science (1) which involves lectures which should be experimentally illustrated or (2) which involves the students themselves doing practical experimental work, the apparatus and the facilities provided for the purpose are sufficient to carry out these objects properly and fully.

(i) That when any subject proposed to be taught requires for its proper understanding to be illustrated by special appliances, *e.g.*, the subject of Geography by maps and models, and

the science subjects by a collection of objects or collections in the form of a museum, such provision has been made.

(j) That the school authorities have made provision to ensure discipline and good conduct among the pupils, both within and without the school premises, and that there are suitable arrangements for their recreation.

(k) That when pupils are not resident with either parents or guardians, the school authorities will insist on such students living either in a hostel or a mess which is duly inspected and placed under the control of some person responsible to the Head Master of the school for the discipline and well-being of such pupils.

(l) That no teacher is allowed to teach—

- (i) in the Entrance Class or Second Class or any section thereof, more than 50 pupils at the same time;
- (ii) in any of the classes from Third to the Sixth, or any section thereof, more than 40 pupils at the same time;
- (iii) in either the Seventh or Eighth Class, or any section thereof, more than 30 pupils at the same time.

3. The Syndicate shall also require full information as to the financial position of the school and must be satisfied that its financial stability is assured. Information obtained on this head shall not be published.

4. The Syndicate shall also require full information as to the reasons for the establishment of the school, and as to the number of schools of the same standard which exist in the neighbourhood of the proposed school, and it must be shown that the establishment and recognition of the school will not be injurious to the interests of education and discipline.

5. The Syndicate shall also require full information as to the fees, if any, which it is proposed to levy in the school.

6. The Syndicate shall require a school, as a condition of its recognition, to send in to the University once in each year, at such time as the Syndicate may prescribe, a short general report of the working of the school, together with a list of the staff of the school, and of any changes which may have taken place in the staff in the course of the preceding year.

The Syndicate shall also require that at the same time an abstract of the actual annual income and expenditure of the school shall be submitted, and shall insist that the remuneration of the teachers shall be on a reasonable scale and that the other expenditure shall be sufficient to maintain the school in efficiency.

The Syndicate shall also obtain an assurance that any transference of management and all changes in the teaching staff will be forthwith reported to the Syndicate.

7. On receipt of the letter of application for recognition, and of all such information as the Syndicate may consider to be necessary to establish a presumptive claim for the recognition of the school, the Syndicate shall call for a report on the points dealt with in Regulations 2—5 inclusive from a competent Inspector, and for this purpose the personal report of the Government Inspector of Schools of the Division in which the school is situated shall usually be considered to be sufficient.

This shall not, however, prevent the Syndicate from calling for special reports by any properly qualified person or persons on any or all of the foregoing points.

Should the person deputed be an Inspector of Schools, his report shall ordinarily be submitted through the Director of Public Instruction of the Province in which the school is situated with such remarks as the Director thinks it necessary to make.

8. On receipt of all the required information, the Syndicate shall decide whether the school shall be recognised or not, and if recognised, the exact courses in which such school may submit candidates for the Matriculation Examination shall be stated in the letter of recognition. If a recognised school desires to add to the courses of instruction in respect of which it is recognised, the procedure described in Regulations 2—7 shall so far as may be necessary, be followed.

9. One of the conditions of recognition, or of the continuance of recognition of a school already recognised, shall be that it shall submit to periodic inspection by a person or persons deputed by the Syndicate from time to time. It is desirable that such inspection take place at least once in each school year, and that copies of the inspection reports should be duly communicated to the University by the person or persons so deputed after each such inspection.

10. It shall be competent to the Syndicate at any time to withdraw the privilege of recognition granted under these Regulations or granted under any rules previously in existence, for any one of the following reasons:—

- (a) If a school on an average of three years fails to pass 88 per cent. of the candidates sent up for the Matriculation Examination.
- (b) If the reports of inspections received show that the school is no longer worthy of recognition.
- (c) If it is found that the conditions which were considered essential to the recognition of the school in the first instance and which obtained when the school was placed on the University list are no longer fulfilled.
- (d) For any other reason considered to be sufficient by the Syndicate, the reason to be specified and recorded.

No action shall be taken on (b), (c) or (d), of Regulation 10 without giving the School Committee an opportunity of stating its own case.

In reference to (a) the following procedure shall be adopted :

- (i) In each year, immediately after the results of the Matriculation Examination have been published, the Registrar shall prepare a list of the schools which on the average of the three preceding examinations (including that just ended) have failed to pass 33 per cent. of the candidates sent up for examination.
- (ii) Such schools shall be warned before the end of July, that if they continue in future years to show unsatisfactory results, their names will be struck off the list of recognised schools.
- (iii) In the year following such warning, if it is found, after the results of the Matriculation Examination have been declared, that any of the warned schools has again passed less than 33 per cent. of the candidates sent up, the privilege of sending up candidates to the Matriculation Examination shall be liable to be withdrawn from it. In this case notice of withdrawal of the privilege shall be issued by the Registrar not later than the 15th of July of each year, and shall take effect after the Matriculation Examination next following.
- (iv) If, on the results of the fourth year so considered, the percentage of passes in any such warned school amounts to 33 per cent. no action shall be taken.

## CHAPTER XXII.

### CONDITIONS TO BE FULFILLED BY SCHOOLS NOW RECOGNISED.

1. Every school recognised by the University, at the time when these Regulations come into force, shall be entitled to exercise the rights conferred by recognition, till the privileges of recognition are withdrawn in the manner provided in Regulation 10 of Chapter XXI.

For this purpose, every school recognised as qualified to present candidates for the Entrance Examination shall be deemed qualified to present candidates for the Matriculation Examination in all subjects other than Geography and Elementary Mechanics, but no such school shall, without the special



permission of the Syndicate, send up candidates for examination in either of these subjects.

If an application for special permission to take up either of these subjects is made, the Syndicate, before granting it, shall satisfy themselves that the school is provided with the necessary appliances and can make proper arrangements for teaching that subject.

2. As soon as practicable after the date on which these Regulations come into force, the Syndicate shall withdraw the privileges of recognition from all recognised schools situated beyond the territorial limits of the University as defined by the Governor-General in Council under section 27 of the Indian Universities Act. Such withdrawal shall take effect from a specified date not later than the 30th of April, 1907.

3. As soon as practicable after the date on which these Regulations come into force, the Registrar shall forward a copy thereof to the authorities of each recognised school situated within the territorial limits of the University as defined by the Governor-General in Council under section 27 of the Indian Universities Act, and invite them to furnish within three months (or such further time as may be prescribed in any case by the Syndicate), information upon the following points:—

- (a) Whether the school is under the management of a regularly constituted committee, on which the teaching staff is represented; whether proper provision is made for the continuance of the existence of such committee, and whether the rules are such that the committee can exercise a necessary amount of control over the working of the school.
- (b) Whether the qualifications, character and experience of the Head Master and rest of the teaching staff are satisfactory, whether due provision is made in respect of the number of teachers and otherwise for carrying on all the courses of instruction in which the school is recognised, and whether the conditions governing the appointment and tenure of office of the Head Master and the rest of the staff are such as to render proper continuity of work possible.
- (c) Whether the buildings in which the school is situated and in which the instruction is carried on are adapted for the purposes of a school, and are in proper sanitary condition; whether the surroundings are suitable and the arrangements made in the buildings and in the furnishing of them are likely to injure in any way the eyesight and general health of the pupils.

- (d) Whether the accommodation is sufficient for the classes under instruction in the school.
- (e) Whether the sanitary conveniences attached to the school are adequate and kept in good order.
- (f) Whether arrangements are made for the supply of good drinking water to the pupils, and facilities are provided to allow them to partake of refreshments.
- (g) Whether provision is made for the maintenance of a library and for lending out appropriate books (not school text-books) for the use of students.
- (h) Whether the school intends to undertake instruction in Geography or Elementary Mechanics; if so, whether the appliances and facilities provided are adequate.
- (i) Whether provision is made to ensure discipline and good conduct among the pupils, both within and without the school premises, and whether arrangements are made for their recreation.
- (j) Whether in the case of pupils who do not reside with parents or guardians, provision is made for their residence in lodgings inspected by and under the control of some person responsible to the Head Master for the discipline and well-being of such pupils.
- (k) Whether the remuneration of the teachers is on a reasonable scale.
- (l) The financial resources of the school, and actual annual income and expenditure for the last three years.
- (m) The fees, if any, levied in the different classes of the school.
- (n) The courses of study, the subjects taught, the routine of work, and the arrangements for exercises and for tutorial assistance.

4. If it appears in the case of any school that it has no regularly-constituted committee, or that it has a committee upon which the teaching staff is not represented, the Syndicate shall call upon the chief controlling authority to place the school forthwith under the management of a regularly-constituted committee on which the teaching-staff is represented.

5. The Syndicate shall obtain from each school an assurance—

- (a) that any transference of management and all changes in the teaching staff will be forthwith reported to the Syndicate,
- (b) that after the expiry of twelve months from the date on which a copy of these Regulations is forwarded to

the chief controlling authority of the school, no teacher will be allowed to teach,

- (i) in the Entrance Class or Second Class or any section thereof, more than 50 pupils at the same time;
  - (ii) in any of the classes from the Third to the Sixth, or any section thereof, more than 40 pupils at the same time;
  - (iii) in either the Seventh or the Eighth Class, or any section thereof, more than 30 pupils at the same time;
- (c) that as a condition of the continuance of recognition, the school will submit to regular and periodic inspection by a person or persons deputed by the Syndicate from time to time, and
  - (d) that a short general report of the working of the school together with an abstract of its actual annual income and expenditure will be submitted once a year at such time as the Syndicate may prescribe.

6. The Syndicate shall call upon each school referred to in Regulation 3 to take within a specified period (which may be extended from time to time at the discretion of the Syndicate) such action in respect of any of the matters mentioned in Regulations 3, 4 and 5, as may appear to them to be essential for its efficiency. Upon failure of the school to take the necessary action, after it has been given reasonable opportunity to do so, it shall be liable to have the privileges of recognition restricted or withdrawn, as the circumstances of the case may require. No order, however, shall be made by the Syndicate in this behalf except upon a personal report on the condition of the school at the time, by a competent person deputed for the purpose, and after giving the School Committee an opportunity of stating its own case.

7. The preceding Regulations shall apply to the School Departments of Affiliated Colleges.

## CHAPTER XXIII.

### ADMISSION, TRANSFER AND WITHDRAWAL OF STUDENTS.

1. These Regulations shall apply only to Colleges affiliated in Arts, Science and Law.

2. At their Annual Meeting the Senate shall appoint a Committee of five Fellows, to be called the Transfer Committee, who

shall deal with all questions referred to them in accordance with the following Regulations

Two members of the Committee and two only shall be persons not connected with any affiliated College.

The proceedings of the Committee shall be submitted every month to the Syndicate for confirmation, and the Syndicate may approve, revise or modify the decision of the Committee on any matter, or direct the Committee to review it. Three members shall form a quorum. In the event of a vacancy occurring between two Annual Meetings of the Senate it shall be at once filled up by the Syndicate.

### *Admissions.*

3. Admission of students to Affiliated Colleges shall ordinarily be allowed only at the commencement of an academical year. If a student applies to a College for admission more than three weeks after the opening of that College in any academical year, his case, unless he brings a Transfer Certificate, shall be referred to the Transfer Committee for decision as to whether he may be permitted to join such College.

4. If a student who has passed the Matriculation, or the Intermediate in Arts or Science or the B.A. or B.Sc. Examination applies for admission to a College, without having previously joined any other College, he may be admitted upon production of his University certificate. A student whose name appears in the gazetted list of candidates who have passed one of the aforesaid University examinations may be provisionally admitted without a certificate, on condition of his producing the certificate within a reasonable time.

5. If a student has been sent up to a University examination, and has either not appeared, or has failed at such examination, he may, on production of the Registrar's receipt, be admitted to any College. The fact of his admission, with the date, shall be written across the face of the receipt.

6. If a student has failed, he shall produce a certificate showing the subject or subjects in which he has failed, which certificate the Registrar shall be bound to furnish within two days after payment of a fee of four annas.

7. A student will be recognised as admitted to a College as soon as he has been accepted by the Principal, and has, where fees are required by the College, paid his admission and first month's fee.

8. When a student has been admitted to an Affiliated College, he shall be considered to belong to that College until—

(a) the end of the academical year in which he has been sent up to a University Examination, or

- (b) the date borne on his Transfer or Withdrawal Certificate, or
- (c) he has given notice of withdrawal, or
- (d) his name has been struck off the College books for absence without notice or for non-payment of College fees, or
- (e) he has been expelled.

#### *Transfers.*

9. If a student has once been admitted to an affiliated College under Regulation 4 or Regulation 5, he shall not, except as otherwise provided, be subsequently admitted to any other Affiliated College, without the production of a Transfer Certificate from the Principal of the College in which he has last been reading.

10. When a student has been admitted into a College, he shall not ordinarily be allowed to take a transfer to any other College except at the end of an academical year.

11. Application for a Transfer Certificate must be made by letter to the Principal of the College. It must be signed by the applicant and countersigned by the applicant's parent or guardian.

12. If application is made at the close of an academical year, the only ground on which it can be refused is, the failure to pay the sums due to the College, including tuition fees, and fines and transfer fee, if any. If it is so refused the ground of refusal shall be notified in writing to the applicant, who shall have the right of appeal to the Transfer Committee.

13. If a student applies for transfer, against whose name "gross misconduct" has been entered in the University Register of students, this fact shall be noted in his Transfer Certificate.

14. If a student applies for transfer at any time other than at the end of an academical year on the ground of (1) transfer of his parent or guardian from the station at which the first College is situated, or (2) desirability of a change of climate and station on the ground of health, duly certified by proper medical evidence, or (3) any other good and sufficient reason, the Principal may grant him a transfer. If the Principal is of opinion that the application for transfer ought not to be granted, he shall, if the student so desires, at once refer the case to the Transfer Committee, stating his grounds of objection.

15. Transfer Certificates under the previous Regulation shall only be issued once a month, except in cases of urgency. The ordinary date of issue shall be the last day of the month, or if this day falls within a vacation or on a holiday, the next preceding working day.

16. A student desiring a Transfer Certificate under Regulation 14, shall submit his application not less than ten days before.

the authorised date of issue. Not less than three days before the latter date he shall be informed whether his application has been granted, and in that case he shall be furnished with a statement of all the sums due by him to the College. If these dues are paid by him on or before the authorised date of issue, he shall receive his Transfer Certificate on that date.

17. If, owing to the intervention of holidays or some unforeseen contingency, it is found impossible, in accordance with the conditions laid down, to issue the certificate on the last day of the month or the next preceding working day, the certificate shall be issued as soon after as possible, the same notice as specified above being given to the applicant with regard to the sums due by him. The date borne on the Transfer Certificate shall be that of the last day of the month for which the transfer is desired, except in cases of urgency, where the date of the certificate shall be the date of issue.

18. If the student does not pay the sums due by him within the time specified above, he shall not be entitled to his Transfer Certificate until the last day of the month in which he pays his dues, or the corresponding day preceding a vacation or holiday.

19. If application is made for a Transfer Certificate after the commencement of a vacation exceeding fifteen days and extending beyond the last day of the month in which it commences, the certificate, if granted, shall bear the date of the last day of such vacation if this coincides with the last day of a month; otherwise, it shall bear the date of the last day of the preceding month. The student applying for transfer shall submit his application at least six days before and shall receive his certificate, if granted, not later than five days after the end of the vacation. He shall, before the issue of the certificate, receive at least three days' intimation of the sums due by him to the College from which he desires transfer, and if these dues are not paid within this time the issue of the certificate shall be deferred in accordance with Regulation 18.

20. All fees for the month, corresponding to the date borne on the Transfer Certificate, shall be paid to the College from which the transfer is taken, and fees shall likewise be paid to the same College for an additional month if the application for transfer is made before a vacation which commences not more than one month after, and which extends more than one month beyond the date on the certificate. The fact of the payment of such additional fees shall be duly entered on the certificate, and unless a student takes admission to another College within a month of the date of his Transfer Certificate he shall not be liable to pay these fees at the second College.

21. In all cases, a student shall remain on the books of the College from which he seeks a transfer until the date borne on the Transfer Certificate, and his attendance at lectures shall be reckoned up to and including that date.

22. The Transfer Certificate shall be in such form as the Syndicate may, from time to time, prescribe.

23. A student shall be liable to pay a transfer fee before obtaining his certificate. The transfer fee shall not (except under special orders of the Transfer Committee in the case of Colleges in which no fees are charged) exceed the ordinary monthly fee of the class.

24. If a student applies for transfer who has failed to submit the exercises required of him, or to give satisfaction at the periodical examinations, the fact shall be noted on the Transfer Certificate.

25. If a student applies for transfer who has been refused permission to appear at a University Examination, the fact of such refusal, with the reasons, shall be noted on the Transfer Certificate.

26. If a student applies for transfer who has not been permitted to continue his studies in the College owing to his non-appearance or failure at the College examinations, or who has not been allowed promotion, the fact shall be noted on the Transfer Certificate, and he shall not be admitted into a higher class in another College within twelve months.

#### *Leaving Certificate.*

27. A student temporarily or permanently ceasing his studies may claim a Leaving Certificate, which shall be in the same form as a Transfer Certificate, and for which the same fee, if any, shall be paid.

28. The Principal of a College may accept a Leaving Certificate in lieu of a Transfer Certificate in a session subsequent to that in which it was issued, but not in the same session. Such Certificate shall be presented at the beginning of the session, and the student shall ordinarily read from the beginning for the full academical year. But by special leave of the Syndicate the lectures in the College then entered may be reckoned from the day and month corresponding to the date on which the student's connection with his former College ceased.

29. The only grounds on which a Leaving Certificate can be refused are (1) gross misconduct, (2) failure to pay the sums due to the College.

80. If a student gives notice of withdrawal from a College without applying for a Leaving Certificate, he shall only be charged fees up to the end of the month in which he gives such notice.

*Absence without Notice.*

31. If a student is absent without notice for more than one month, his name may be struck off the books, in which case he shall be liable to pay fees for one month subsequent to that in which he last attended the lectures.

32. If a student, who has been absent without notice for more than one month, applies for a Leaving Certificate, the Principal may at his discretion, grant such certificate, and may date the student's withdrawal from the day on which he last attended the lectures.

*Expulsion and Rustication.*

33. A Principal may for breach of College discipline—

- (1) suspend a student for one month or less ;
- (2) rusticate a student for any period exceeding one month and not exceeding the remainder of the academical year; or
- (3) expel a student.

In the second and third cases the matter shall be reported by the Principal to the Syndicate, in the form of a brief statement, including the date of rustication or expulsion

34. If a student who has been so rusticated or expelled desires to continue his studies in some other College, he may apply to the Syndicate, who shall, after consideration of the circumstances, issue such orders as they may think proper: Provided that no order shall issue permitting such student to continue his studies in another College without a reference to the Principal of the College from which the student has been rusticated or expelled.

*Miscellaneous.*

35. A student before being sent up to a University Examination shall be required to pay all sums due to the College in which he has been reading, including fees up to the end of the academical year.

36. Any instance of alleged " gross misconduct " on the part of a student when not followed by expulsion or rustication, must be at once notified by the Principal of the College to the



Transfer Committee, together with a statement by the student. The Transfer Committee shall determine whether the case shall be recorded in the University Register of students as one of "gross misconduct." Unless it is so recorded no future action taken on it by the Principal shall be recognised by the University.

87. Wilful transgression or colourable evasion of any of the foregoing rules shall be reported to the Syndicate.

88. All questions arising between one Principal and another respecting the interpretation of these rules, shall be referred as soon as possible to the Transfer Committee.

89. The academical year for the purpose of these Regulations shall be taken to commence on the 1st of June in one year and to end on the 31st of May in the next.

The Syndicate may alter these limits, if necessary.

## CHAPTER XXIV.

### RESIDENCE OF STUDENTS.

1. Every student reading in an Affiliated College with the object of appearing at a University Examination, who does not reside with his parents or other legal guardian, or guardian approved by the Principal of his College, shall reside either in his College or in lodgings approved by his College.

Act VIII of 1904,  
sec. 21 (c)

Any student making a false declaration in respect of the guardianship under which he is living, shall be punished by the Principal of his College, who will deal with the offence as occasion requires.

2. A student shall be held to be residing in a College, if he resides in a Collegiate Hostel as defined under Regulation 7.

3. The following classes of lodging may be approved by a College:—

- (a) Non-Collegiate Hostels, that is, hostels under external management.
- (b) Messes attached or unattached.
- (c) Private lodgings.

4. At the Annual Meeting of the Senate a Committee of six Fellows, not less than three of whom must be Indians, shall be appointed to deal in accordance with these Regulations with

questions relating to the residence of students in non-collegiate hostels, messes and private lodgings.

5. This Committee shall be called the Students' Residence Committee. The proceedings of the Committee shall be submitted every month to the Syndicate for confirmation, and the Syndicate may approve, revise or modify the decision of the Committee on any matter, or direct the Committee to review it.

Four members shall form a quorum.

In the event of a vacancy occurring in the course of the year it shall be at once filled up by the Syndicate.

6. Nothing in these Regulations shall be taken to authorise the Students' Residence Committee or any member thereof to interfere with the internal management of a hostel or mess, or with the control of a Principal over his students. But if the Committee is satisfied, upon the report of one or more of its members, or of an Inspector, that a hostel or mess is maintained or conducted in a manner contravening these Regulations, the Committee shall report the matter to the Syndicate.

### *Collegiate Hostels.*

7. A Collegiate Hostel is a Boarding House for students which is under the direct and exclusive control of one College, which is regarded as an integral part of that College, and which admits only those students who are reading in that particular College.

8. The management of a Collegiate Hostel shall be entirely in the hands of the Governing Body of the College to which it belongs. There shall be in every such Hostel a Resident Superintendent, and, if necessary, one or more Assistant Superintendents.

9. The Principal of the College concerned shall frame rules for his Collegiate Hostel, but in the case of every such hostel, the following practices shall be observed:—

- (a) Only male servants shall be employed.
- (b) A roll shall be called both morning and evening.
- (c) Without the special permission of the Superintendent, which shall be recorded in a book kept for the purpose, no student shall absent himself from the Hostel between 9 P.M. and 6 A.M.
- (d) The Superintendent shall keep a Gate Book in which he shall enter the name of any student who returns to the Hostel between the above hours; he shall also enter his remarks against each case.

10. Every Collegiate Hostel shall be inspected once a year by the Inspector of Colleges.

11. Students shall have no right of appeal to the Syndicate against the orders of the Governing Body upon questions of internal discipline.

A student cannot be expelled from a Collegiate Hostel without being also expelled from the College to which it belongs, but he may be transferred to other lodgings under the control of the Principal.

### *Non-Collegiate Hostels.*

12. A Non-Collegiate Hostel is a Boarding House for students, under external management. A Non-Collegiate Hostel shall not be recognised unless the individual or individuals responsible for the finances of such hostel can give reasonable guarantee for its continued maintenance. Such Hostels may admit only the following classes of boarders:—

- (1) Students of any Affiliated College;
- (2) Tutors of such students;
- (3) School boys reading in recognised schools who are nearly related to students residing in such hostels, and whose parents or guardians desire them to live with or under the direct supervision of such students.

Boarders belonging to classes (2) and (3) shall not be admitted without the sanction of the Students' Residence Committee.

13. Every Non-Collegiate Hostel shall be (a) under the supervision of a Manager, and (b) under the general control of a Visiting Committee, both approved by the Students' Residence Committee. The Visiting Committee shall be composed of three persons, of whom at least two shall be representatives of the College or Colleges concerned.

14. All Non-Collegiate Hostels shall be open to inspection by the Students' Residence Committee and by any duly appointed University Inspector. Every such hostel shall keep an Inspection Book in which the inspecting authorities may enter remarks.

15. There shall be in every such hostel a properly qualified Resident Superintendent, and, if necessary, one or more Assistant Superintendents.

16. The conditions laid down under Regulation 9, clauses (a), (b), (c), and (d) shall also be enforced as regards all boarders in the case of Non-Collegiate Hostels: and in addition thereto the Superintendent shall keep a Register of the boarders containing the names and home addresses of the boarders and of

their parents or other guardians. The Register shall contain a column for remarks.

17. Every Non-Collegiate Hostel shall have written or printed rules, and such rules shall not contravene any of the foregoing conditions.

#### *Messes.*

18. A mess is a temporary Boarding House formed by a combination of students who desire to share expenses.

A mess has not necessarily any fixity of location for a period longer than one academical year, nor does the responsibility for its finances rest with the College or Colleges to which its members belong. Students not otherwise provided for by these Regulations shall live in messes provided or approved by the College authorities.

19. In the case of messes for which the University or any other public body provides the funds in part or in whole, each mess shall be attached to one College, and the students living in that mess shall be all students of one and the same College, and the Principal of that College shall have full control over that mess. Such messes shall be called attached messes.

The college to which a mess is attached shall appoint a Visiting Committee in consultation with the public body which provide funds for the mess and subject to the approval of the Students' Residence Committee.

20. Regulations 14 to 17 shall apply equally to attached messes.

21. Messes which receive no subvention from public bodies shall be known as unattached messes, and to them shall apply Regulations 12, 14, 15, 16 and 17.

There shall also be a Visiting Committee for unattached messes, consisting of three persons approved by the Students' Residence Committee, two of whom at least shall be representatives of the College or Colleges concerned.

#### *Recognition and License.*

22. Every Collegiate Hostel must obtain a Certificate of recognition from the University.

All other hostels and all messes must obtain annually, within such time as the Syndicate may determine, a License from the University.

All applications for recognition of Collegiate Hostels shall be submitted by the Governing Body of the College concerned;

and shall be dealt with by the Syndicate. Applications for License shall be dealt with by the Students' Residence Committee, and submitted in the case of (a) Non-Collegiate Hostels, by the Proprietor, (b) Attached messes, by the Principal of the College concerned, and (c) Unattached messes, by the College or Colleges concerned.

23. In dealing with applications for Recognition or License, the Syndicate or the Students' Residence Committee, as the case may be, shall have regard to the following points:—

- (a) Suitability of the buildings.
- (b) Adequacy of the accommodation.
- (c) Suitability of the neighbourhood.
- (d) Sanitary conditions.

24. The Senate may from time to time make rules not inconsistent with these Regulations relating to messes and Non-Collegiate Hostels.

#### *Private Lodgings.*

25. Upon the recommendation of the Principal of his College, a student may be permitted to live in his own residence or hired lodgings, provided that (1) if he is under 18 years of age he shall be accompanied by a tutor approved by his parents or other guardian, and (2) in any case the Students' Residence Committee is satisfied that he can be permitted so to live without detriment to his health, studies or character.

#### *Miscellaneous.*

26. The Students' Residence Committee shall have power to delegate its functions in respect of Muffasil Centres to Local Committees, which shall submit all their proceedings to the Students' Residence Committee, for submission to, and confirmation by, the Syndicate.

27. The Syndicate may, upon the recommendation of the Students' Residence Committee, sanction the admission of the following classes of boarders in non-collegiate Hostels:—

- (a) University students.
- (b) School boys attending a recognised School attached to an affiliated College, though such students are not related to any College-student residing in the Hostel, provided that the controlling authority of the Hostel gives adequate guarantee for the maintenance of discipline.

28. The Syndicate may, in special and exceptional cases on the recommendation of the Principal controlling an attached Mess and of the Students' Residence Committee, permit one

or more students of any other affiliated College or a student of any recognised School, who is nearly related to a member of the Mess, to reside in such Mess.

## CHAPTER XXV.

### EXAMINATIONS.

#### *Setting of Papers.*

1. No question shall be asked at any University examination which would require an expression of religious belief on the part of the candidates; and any answer or translation given by any candidate shall not be objected to on the ground of its expressing peculiarities of religious belief.

2. Candidates shall give their answers in their own words as far as practicable in all subjects. This rule shall be inserted as a head note in every question paper.

3. Examiners setting papers shall be guided, as to the scope of the subject of examination, by the syllabus prescribed in the Regulations, and as to the standard and extent of knowledge required, by the books, if any, recommended from time to time for such purpose.

4. No copy of any examination paper is to be retained by the person setting it.

5. The papers set should be such as candidates can reasonably be expected to answer within the time allotted. The questions in each subject should be fairly distributed over the whole course in that subject, and should conform to the Regulations laid down for the particular examination; there should not be any marked change of standard from year to year, but it is not required that the same type of questions should be set every year. Examiners shall always allow some choice of questions.

6. Questions should be so framed as to encourage good methods of work and teaching, and to discourage unintelligent memorizing.

#### *Awarding of Marks.*

7. In the case of examinations in all Faculties up to and including the examination for the Bachelor's Degree, the Registrar shall, as soon as the results have been tabulated, prepare a list of the candidates who have failed in one subject only; in

order to guard against any possible inaccuracy, their papers in the subject in which they have failed shall be re-examined *on the method of marking already adopted, and without any alteration of the standard.*

8. Examiners, in giving marks, shall take the correctness of the language of the answer into account.

9. Examiners, in giving marks, shall consider whether the answers indicate an intelligent appreciation of the subject or are merely the result of unintelligent memory work.

### *Meetings of Examiners.*

10. As soon as possible after an examination has been held, the persons who have set any question paper in the examination, and those who are to examine the answers to that paper or any portion of it, and the Head Examiner, if there is one, shall meet to determine the kind or standard of answers to be expected from candidates, and to decide upon a system of marking. Their conclusions shall be embodied in a memorandum to be jointly signed by them and forwarded to the Registrar. If, owing to unavoidable circumstances, any Examiner who has set a paper is unable to attend the meeting, the remaining Examiners contemplated by this Regulation shall meet and transact the aforesaid business.

11. In the case of any examination for the degree of Bachelor, Master, or Doctor in the Faculties of Arts and Science and in the case of every examination in the other Faculties, the entire body of Examiners for that examination shall meet, as soon as possible after the tabulation of the results, and draw up a report of the examination as a whole for the consideration of the Syndicate.

As soon as possible after the publication of the results of every examination in every Faculty referred to in the preceding paragraph, the persons who have examined the answer papers in each subject shall meet together and draw up a report upon the examination in that subject for the consideration of the Syndicate.

12. The reports submitted to the Syndicate shall ordinarily embody such remarks and recommendations suggested by the work done by the candidates which it is thought desirable in the interests of education to communicate to the Heads of Colleges and Schools.

### *Miscellaneous.*

13. English shall be the medium of examination in all subjects except where otherwise specifically indicated.

14. Members of the Syndicate or of the Boards of Studies shall not be debarred from acting as Examiners.

15. Canvassing for examinerships will not be countenanced by the University; and if it is proved to the satisfaction of the Syndicate that canvassing has been carried on by any person applying for an examinership, the candidate shall be disqualified.

16. Examiners are required to keep the results of the examinations and the marks assigned to candidates strictly secret.

17. If it is proved to the satisfaction of the Syndicate that the questions in any subject are not such as candidates could reasonably be expected to answer within the time allotted, or have not been fairly distributed over the whole course in that subject, or do not conform to the Regulations laid down for the examination in that subject, or show a marked change of standard, or that from any other cause injustice has been or is likely to be done, the Syndicate shall issue such directions as may be necessary to rectify matters.

18. No candidate shall ordinarily be declared to have passed or to have obtained Honours unless he has attained the standard laid down in the Regulations for a Pass or for Honours. If, however, the Syndicate are satisfied that consideration ought to be allowed in the case of any candidate by reason of his high marks in a particular subject or in the aggregate, the Syndicate may pass such candidate or award him Honours as the case may be:

Provided that no action shall be taken by the Syndicate in this behalf, except—

- (a) upon the Report of the Moderators in the case of the Matriculation or the Intermediate Examination in Arts or Science, or
- (b) upon the Report of the Examiners in the case of any other Examination.

## ARTS AND SCIENCE EXAMINATIONS.

### *Appointment of Examiners.*

1. The Registrar shall, at such times as the Syndicate may determine, send to all Fellows on the Faculties of Arts and Science and to all Heads of Colleges affiliated in Arts and Science who are not Fellows, a circular requesting them to forward within one month the names of persons whom they consider suitable for appointment as Examiners for the University Examinations specified by the Syndicate.

Every such recommendation shall be accompanied by a brief statement of the special qualifications of their nominees.



2. Such recommendations and any applications from candidates for examinerships received by the Registrar shall, in the first instance, be referred to the Boards of Studies concerned, who shall be asked to nominate for appointment as Examiners a number of persons not less than that required for each examination as indicated by the Syndicate, and not more than half in excess of that number. In appointing Examiners the Syndicate shall consider the recommendations and applications, together with the reports of the Boards thereon, but its selection shall not be limited by them.

3. A Board of Examiners consisting of two or more persons shall be appointed by the Syndicate, whenever practicable, to set papers in each subject in each examination of the University. Each paper shall, whenever practicable, be set by two Members of the Board in consultation. In the case of a difference of opinion arising between two Examiners, the point shall be referred to the other Member or Members of the Board, if any, otherwise it shall be referred to the Syndicate.

4. One Member of the Board shall, unless the Syndicate consider it undesirable, be appointed Head Examiner in the case of examinations for which a Head Examiner is required. In other cases, as far as practicable, the Members of the Board who set the papers shall be among those who look over the answer-papers.

5. For the Matriculation, the Intermediate in Arts and Science, and the B.A. and B.Sc. Examinations, no one shall be appointed Member of a Board of Examiners to set a paper in a subject of which he teaches the whole or a part for the corresponding examination.

6. The Board of Examiners in each subject for the degree of Master in the Faculties of Arts and Science shall be composed of—

- (a) the University lecturers in that subject, and
- (b) one or more other Examiners appointed by the Syndicate. Such Examiners shall not be persons lecturing to or preparing candidates for the examination in the subject for which the Board is constituted.

7. Each Board appointed under the preceding Regulation shall meet as soon as possible after appointment for the purpose of apportionment of the examination papers in the subject for which it has been constituted. The appointment, as far as the University Lecturers are concerned, shall ordinarily be proportionate to the course covered by their respective lectures. The distribution of papers shall be kept strictly secret.

#### *Moderators.*

8. Before the commencement of the Matriculation Examination or the Intermediate Examinations in Arts and Science,

the Syndicate shall appoint five Syndics as Moderators, of whom three shall be Members of the Faculty of Arts, and two Members of the Faculty of Science.

The duties of the Moderators shall be—

- (a) to receive from the Head Examiners or the Examiners, as the case may be, for the Matriculation Examination and the Intermediate Examinations in Arts and Science, a Report on the Examination in the subject with which they are concerned, to consider the Reports, and to submit a Report to the Syndicate embodying such points as ought, in their opinion to be brought to its notice; and
- (b) to report to the Syndicate the names of candidates, if any, who have not attained the standard laid down in the Regulations, but who, in the opinion of the Moderators, deserve consideration by reason of the high marks obtained by them in a particular subject or in the aggregate.

#### LAW EXAMINATIONS.

##### *Appointment of Examiners.*

1. The Registrar shall at such times as the Syndicate may determine, send to all Fellows on the Faculty of Law and to all Heads of Colleges affiliated in Law who are not Fellows, a circular requesting them to forward within one month the names of persons whom they consider suitable for appointment as Examiners for the Preliminary, Intermediate and Final B.L. Examinations.

Every such recommendation shall be accompanied by a brief statement of the special qualifications of their nominees.

2. Such recommendations and any applications from candidates for examinerships received by the Registrar shall, in the first instance, be referred to the Board of Studies in Law, who shall be asked to nominate for appointment as Examiners a number of persons not less than that required for each examination as indicated by the Syndicate, and not more than half in excess of that number. In appointing Examiners the Syndicate shall consider the recommendations and applications, together with the reports of the Board of Studies thereon, but its selection shall not be limited by them. The Dean of the Faculty of Law for the time being shall be *ex-officio* President of the Examiners thus appointed.

3. A Board of Examiners consisting of three or more persons shall be appointed by the Syndicate, whenever practicable, to set papers in each examination. The Dean of the Faculty of

Law for the time being shall be *ex-officio* President of each Board. Each paper shall, whenever practicable, be set by two Members of the Board in consultation. In the case of a difference of opinion arising between two Examiners, the point shall be referred to the President. The papers set shall be moderated by him in consultation with the other Members of the Board.

4. As far as practicable, the Members of the Board who set the papers shall be among those who look over the answer-papers.

5. For the Preliminary, Intermediate and Final B.L. Examinations, no one shall be appointed Member of a Board of Examiners to set a paper in a subject of which he teaches the whole or a part for the corresponding examination.

### MEDICAL EXAMINATIONS.

#### *Appointment of Examiners.*

1. The Registrar shall, at such times as the Syndicate may determine, send to all Fellows on the Faculty of Medicine and to all Heads of Colleges affiliated in Medicine who are not Fellows, a circular requesting them to forward within one month the names of persons whom they consider suitable for appointment as Examiners for the University Examinations specified by the Syndicate.

Every such recommendation shall be accompanied by a brief statement of the special qualifications of their nominees.

2. Such recommendations and any applications from candidates for examinerships received by the Registrar shall, in the first instance, be referred to the Board of Studies in Medicine who shall be asked to nominate a number of persons not less than that required for each examination as indicated by the Syndicate, and not more than half in excess of that number. In appointing Examiners the Syndicate shall consider the recommendations and applications, together with the reports of the Board of Studies thereon, but its selections shall not be limited by them. The Dean of the Faculty of Medicine for the time being shall be *ex-officio* President of the Examiners thus appointed.

3. A Board of Examiners consisting of two or more persons shall be appointed by the Syndicate, whenever practicable, to set papers in each subject in each examination. The Dean of the Faculty of Medicine for the time being shall be *ex-officio* President of each Board. Each paper shall, whenever practicable, be set by all the Members of the Board in consultation. In the case of a difference of opinion arising between two Examiners, the point shall be referred to the President. The papers set shall be moderated by him in consultation with the other Members of the Board.

4. As far as practicable, the Members of the Board who set the papers shall be among those who look over the answer-papers.

5. Of the persons appointed to set papers in any subject for any examination, one at least must be a Teacher or Professor in that subject, and one at least, whenever available, shall be a person not teaching that subject for that examination.

6. Every oral, practical and clinical examination shall be conducted by two Examiners jointly.

#### ENGINEERING EXAMINATIONS.

##### *Appointment of Examiners.*

1. The Registrar shall, at such times as the Syndicate may determine, send to all Fellows on the Faculty of Engineering and to all Heads of Colleges affiliated in Engineering who are not Fellows, a circular requesting them to forward within one month the names of persons whom they consider suitable for appointment as Examiners for the University Examinations specified by the Syndicate.

Every such recommendation shall be accompanied by a brief statement of the special qualifications of their nominees.

2. Such recommendations and any applications received by the Registrar shall, in the first instance, be referred to the Board of Studies in Engineering, who shall be asked to nominate a number of persons not less than that required for each examination as indicated by the Syndicate, and not more than half in excess of that number. In appointing Examiners, the Syndicate shall consider the recommendations and applications, together with the reports of the Board thereon, but their selection shall not be limited by them. The Dean of the Faculty of Engineering for the time being shall be *ex-officio* President of the Examiners so appointed.

3. A Board of Examiners consisting of two or more persons shall be appointed by the Syndicate, whenever practicable, to set papers in each subject in each examination. The Dean of the Faculty of Engineering for the time being shall be *ex-officio* President of each Board. Each paper shall, whenever practicable, be set by two Members of the Board in consultation. In the case of a difference of opinion arising between two Examiners, the point shall be referred to the President. The papers set shall be moderated by him in consultation with the other Members of the Board.

4. As far as practicable, the Members of the Board who set the papers shall be among those who look over the answer-papers.

5. Of the persons appointed to set papers in any subject for any examination, one at least must be a Lecturer on that subject, and one at least shall be a person not teaching that subject for that examination.

## CHAPTER XXVI.

### CONDITIONS OF STUDY IN AFFILIATED COLLEGES.

1. A College affiliated in any subject for any of the examinations mentioned in this section shall provide for the delivery of the minimum number of lectures specified hereinafter to students who take up that subject.

(i) Intermediate Examination in Arts or Science—

(a) 140 lectures in each subject, of which not less than 60 shall be delivered in the second-year.

(b) No lectures need be delivered in Vernacular Composition.

(ii) B. A. or B.Sc. Examination—

(a) In the Pass Course in each subject—160 lectures, of which not less than 60 shall be delivered in the second-year.

(b) In the Honours Course in each subject—80 lectures in addition to the lectures in the corresponding Pass Course, of which not less than 30 shall be delivered in the second-year.

(c) No lectures need be delivered in Vernacular Composition.

(iii) M.A. or M.Sc. Examination—180 lectures in each subject.

(iv) Licentiate in Teaching—

Theory and Practice of Teaching	...	...	80 lectures.
Methods of Teaching	...	...	80 lectures.
Selected Educational Classics	...	...	20 lectures.
Course in English	..	...	60 lectures:

(v) Bachelor of Teaching—

Theory and Practice of Teaching	...	...	60 lectures.
Methods of Teaching	...	...	60 lectures.
History of Educational Ideas	...	...	40 lectures.
Educational Classics	...	...	20 lectures.

(vi) Preliminary, Intermediate or Final Examination in Law—in each subject or group of subjects 32 lectures and 12 sittings of a Moot Court.

(vii) Preliminary Scientific M.B. Examination—

Inorganic Chemistry	...	...	...	...	40 lectures.
Physics	...	...	...	...	20 lectures.
Zoology	...	...	...	...	20 lectures.
Botany	...	...	...	...	20 lectures.

(viii) First M.B. Examination—

Anatomy	...	...	...	...	100 lectures.
Physiology	...	...	...	...	80 lectures.
Pharmacology	...	...	...	...	80 lectures.
Organic Chemistry	...	...	...	...	15 lectures.

(ix) Final M. B. Examination—

Medicine	..	...	...	..	100 lectures.
Mental Diseases	...	...	...	...	8 lectures.
Surgery	.	...	...	...	100 lectures.
Ophthalmology	...	...	...	...	15 lectures.
Midwifery	...	...	...	...	80 lectures.
Medical Jurisprudence	...	...	...	...	40 lectures.
Hygiene	.	..	..	..	20 lectures.

In the Medical Course there shall be in addition to the lectures specified above practical courses as prescribed by the Syllabus.

2. If a College fails for three consecutive years to deliver the minimum number of lectures prescribed above in any subject, proceedings shall be taken under section 24 of the Indian Universities Act to withdraw from it the privileges of affiliation in that subject.

3. Every lecture shall cover a period of not less than 45 minutes inclusive of the time allowed by the College Rules for the assembling of the students.

4. For the purpose of these Regulations a period of practical work or class exercises or class examinations of not less than 45 minutes shall be considered to be equivalent to a lecture.

5. Every candidate, who desires to appear as a collegiate student at any one of the examinations mentioned in section 1, shall be required to prosecute a regular course of study for the time specified in the Regulations in the subjects which he takes up for the examination in question.

6. No student shall be considered to have prosecuted a regular course of study in any subject for any examination unless he has attended at least 75 per cent. of the lectures delivered in that subject in one or more affiliated Colleges.

7. No lecture shall be deemed to be a lecture within the meaning of these Regulations, unless it is delivered to a whole class or permanent section of a class and unless it is reckoned in calculating the percentage of attendance of all students of the class or section who have taken up the subject in which the lecture is delivered.

8. If the College to which the student belongs, is not affiliated in a particular subject which he desires to take up for examination, he may be permitted, by mutual arrangement between the Principals of the Colleges concerned, to attend lectures on that subject in another duly affiliated College.

9. The percentage of attendance of every student under section 5 shall be calculated on the total number of lectures delivered in each subject from the commencement of the academical year. If a student is transferred from one College to another, the percentage of attendance in the first College shall be calculated on the total number of lectures delivered in each subject up to the date borne on the transfer certificate, and in the second College, on the lectures delivered after that date.

10. In cases where a student, after study for the period prescribed by the Regulations, shall have failed to attend 75 per cent. of the lectures in any subject or subjects during this course, he shall not be admitted to the examination as a collegiate student, unless (a) he attends lectures in such subject or subjects for another academical year, and (b) his attendance in the subject or subjects in question for the period prescribed by the Regulations amounts to at least 75 per cent. of the lectures delivered in the College or Colleges in which he studied for the prescribed period.

11. If a candidate for any of the examinations mentioned in Regulation 1 does not present himself at the examination immediately succeeding the completion of his regular course of study, he may appear at any of the two following examinations of the same standard, provided that he produces, in addition to the ordinary certificate or certificates as required by the Regulations, a certificate from the Principal of the College at which he last studied or from a Member of the Senate, testifying to his good character during the intervening period.

If such candidate desires to present himself at any subsequent examination he shall be required to prosecute a fresh course of study for the full period in accordance with the Regulations.

12. No student shall be considered to have prosecuted a regular course of study in any subject for the M.A. or M.Sc. Examination under University Professors or Lecturers unless the total number of lectures delivered by such Professors or Lecturers is at least 180, and unless he has attended at least 75 per cent. of the lectures in each course.

If, however, the total number of University lectures delivered in any subject does not amount to 180, attendance on 75 per cent. of the lectures in each available course will suffice.

13. The students of affiliated Colleges or University students who may be in Military or Naval training will, for

purposes of admission to their respective examinations, be deemed to have attended all lectures and practical work during such period in their respective classes in the subjects taken up by them provided they produce certificates of having been in such training from the officer under whom they were in training.

Provided also that in the case of students with science subjects they produce certificates from their Principals or some other competent authority approved by the Syndicate, to the effect that they have taken satisfactory courses of practical work in those subjects.

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## CHAPTER XXVII.

### CONDITIONS TO BE FULFILLED BY COLLEGES AFFILIATED IN SCIENCE.

#### GENERAL.

Colleges affiliated in any Science subject except Geography and Experimental Psychology must be provided with gas and a plentiful supply of water, and there must be adequate connexions for these with the portion of the building allotted to science teaching. There must be a suitably fitted lecture-theatre of the ordinary type, and the lecture table, which should not be less than 12 feet long, must be provided with gas and water fittings, and must also be adapted in other respects for lecture demonstrations in the various sciences for which it is intended to use the theatre. There should be an aperture in one of the walls by which a beam of solar light can be admitted for optical and projection work. One lecture theatre will ordinarily suffice, but if the number of subjects in which the College is affiliated is considerable, additional accommodation in this respect will be necessary. There shall be separate rooms for practical work in each of the subjects for which the College is affiliated, and in each such room there shall be a good black-board and a small demonstration table. A sufficient quantity of apparatus, etc., must be provided both for practical and lecture work, and there must be ample cupboard room for the apparatus when not in use. Lists are given in Appendix B shewing what may be considered the minimum requirements in each case. For all Colleges affiliated up to the M.A. or M.Sc. standard in Physics or Chemistry an electric installation is desirable and should certainly be provided wherever there is a town supply of electricity.



## . SPECIAL.

## I.—PHYSICS.

(a) *Intermediate Standard*.—Not more than 20 students shall be placed under one teacher in the practical class at one time. If the number exceeds 20, an additional teacher or demonstrator will be required. The size of a room which it is intended shall accommodate the above number of students shall not be less than 20 feet by 25 feet. If the number of students exceeds 20, the size of the room must be proportionately increased. The working tables should be small, about 6 feet by 3 feet, and should be very strongly made of teakwood. One or two large sinks with water taps must be provided.

(b) *B.A. or B.Sc. Standard*.—There shall be one teacher to every 15 students in the practical class. The room used for the Intermediate course, having the dimensions given above, will suffice for the B.A. or B.Sc. students and for a class of fifteen but it is necessary for the work in the present course that each working place on the tables should be supplied with gas. A small room for optical work is desirable, but if it is not possible to provide this a portion of the laboratory, which in this case should be larger, may be screened off for the purpose. A small workshop should be attached to the laboratory.

(c) *M.A. or M.Sc. Standard*.—There shall be one teacher to every 10 students in the practical class. In addition to the general laboratory two other rooms will be necessary, one for optical and the other for electrical work. A larger workshop will be necessary than in the previous case, and it should be furnished with a good lathe. A permanent *mistri* should be employed.

## II.—CHEMISTRY.

(a) *Intermediate Standard*.—Not more than 20 students shall be placed under one teacher in the practical class at one time. If the number exceeds 20, an additional teacher or demonstrator will be required. The size of a room which it is intended shall accommodate the above number of students, shall not be less than 20 feet by 30 feet, and if the number of students exceeds 20, it must be proportionately increased. The working benches must be provided with gas one jet for each student. Those benches which occupy the centre of the room should, for the sake of economy of space, be of double width, so as to admit of students working on both sides, and the shelf for reagents may, in this case, run along the centre of the table. Water taps with the corresponding sinks, should be provided in the ratio:

of about one to four students but the sinks in the case of the tables of double width, may be replaced by a properly treated wooden trough running along the centre. Two or three fume closets are necessary; one will suffice, if the working tables are supplied with small draught hoods.

(b) *B.A. or B.Sc. Standard.*—There shall be one teacher to every 15 students in the practical class. The laboratory for the Intermediate course can be adapted for the use of the B.A. and B.Sc. students as well. A small and well-lighted balance room and a combustion room must be provided in addition.

(c) *M.A. or M.Sc. Standard.*—An additional laboratory with rooms for special work shall be provided for the use of M.A. and M.Sc. students, not more than ten of whom shall be under the supervision of one teacher.

### III.—PHYSIOLOGY.

(a) *Intermediate Standard.*—Not more than 24 students shall be placed under one teacher. The working benches shall be furnished with racks for chemical and microscopical reagents, and gas, water and sinks shall be supplied in the same way as in the chemical laboratory. The size of a room for 24 students shall be not less than 20 feet by 30 feet.

(b) *B.A. or B.Sc. Standard.*—Not more than 12 students shall be placed under one teacher. The room for the practical work of the Intermediate standard can with some slight adaptation be also used for the present standard.

(c) *M.A. or M.Sc. Standard.*—For M.A. or M.Sc. Classes at least two additional laboratories are necessary for special work.

### IV.—BOTANY.

The number of students that may be placed under one teacher in the practical classes is the same as for Physiology and the conditions to be fulfilled with regard to the laboratories are substantially the same as in that subject.

### V.—ZOOLOGY.

Not more than 20 students shall be placed under one teacher in the practical classes. Otherwise the requirements are the same as in the case of Physiology and Botany, except that the accommodation required for M.A. and M.Sc. students will not be so great as in those subjects.

### VI.—GEOLOGY.

The chief requirements in this subject are a small geological museum, and a laboratory suitable for optical as well as for a certain amount of chemical work.

## VII.—GEOGRAPHY.

There must be a small museum for practical teaching and demonstration, and a well-lighted room suitable for drawing and modelling, and fully furnished with the appliances necessary for the course of practical work prescribed by the Regulations.

## VIII.—EXPERIMENTAL PSYCHOLOGY.

The laboratory must be furnished with plastic and other models and charts for anatomical and physiological demonstrations, in addition to the appliances necessary for psycho-physical work, and must also be suitable for optical and electrical work.

## CHAPTER XXVIII.

## UNIVERSITY LIBRARY.

1. At the Annual Meeting, the Senate shall appoint two committees, one to be called the Library General Committee, and the other the Library Executive Committee.

2. The General Committee shall consist of the Vice-Chancellor, the Registrar, and twelve members of the Senate.

The Executive Committee shall consist of the Vice-Chancellor, the Registrar, and three members of the General Committee.

Members of the Committees shall hold office till the next Annual Meeting.

In the event of a vacancy occurring in the course of the year, it shall be at once filled up by the Syndicate.

3. The General Committee shall meet ordinarily once every six months, and, at other times, when convened by the Vice-Chancellor. Seven members shall form a quorum.

The Executive Committee shall meet ordinarily once a month, and at other times when convened by the Vice-Chancellor. Three members shall form a quorum.

4. The proceedings of the meetings of the Committees shall be recorded and regularly submitted to the Syndicate for confirmation. The Syndicate may approve, revise, or modify the decision of either Committee on any matter, or direct the Committee to review it.

5. The duties of the General Committee shall be—

(I) to recommend to the Syndicate rules regulating—

(a) the use of the Library by Fellows, by Registered Graduates, and by other persons,

- (b) the payment of fees for the use of the Library by persons other than Fellows,
- (c) the conditions of borrowing and returning books,
- (d) the suspension of privileges for the loss, mutilation, or disfigurement of books, or for any breach of the Library Rules,
- (e) the annual inspection of the Library, and
- (f) all other matters relating to the management of the Library;

(II) to recommend to the Executive Committee the purchase of books and manuscripts.

6. The duties of the Executive Committee shall be to give orders for the purchase, arrangement and cataloguing of the books and manuscripts, for the provision of book-cases and other fittings, for the cleaning of the Library, and for all ordinary repairs, and generally to supervise the management of the Library, and to do all that is in their opinion desirable for the maintenance of the Library in an efficient condition, so far as it is practicable to do so within the limits of the annual grant.

7. Upon the recommendation of the Syndicate, the Senate shall annually make a grant for the Library, and may, if necessary, add to the grant in the course of the year.

8. The Syndicate shall make an annual report to the Senate concerning the state of the Library and all matters concerning the Library which in their opinion should be brought to the notice of the Senate. The report shall be accompanied by a statement of the expenditure of all moneys devoted to the purposes of the Library.

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## CHAPTER XXIX.

### TRANSITORY REGULATIONS.

1. In this chapter, the phrase "new Regulations" shall be taken to mean the present body of Regulations.

The phrases "existing Bye-laws," "existing Regulations," and "existing Rules" shall be taken to refer respectively to the Bye-laws, Regulations and Rules in operation on the date previous to that on which the new Regulations come into force.

2. All questions relating to the alteration or cancellation of existing Bye-laws, Regulations and Rules  
 Act VIII of 1904, shall be decided with reference to the provisions of this chapter.  
 sec. 26 (2) (g).

3. The new Regulations shall come into force on the date of their publication in the *Gazette of India*; such date shall be called the date of commencement of the new Regulations.

4. Except as hereinafter provided, on and from the date on which the new Regulations come into force, all existing

- (i) Bye-laws,
- (ii) Regulations, and
- (iii) Rules which are in any way inconsistent with the new Regulations,

shall cease to have operation.

5. As soon as practicable after the date of commencement of the new Regulations, the Vice-Chancellor shall cause steps to be taken for the appointment of the Faculties, the Syndicate, the Boards of Studies, the Board of Accounts, the Library General Committee, the Library Executive Committee, the Transfer Committee, the Students' Residence Committee, the Registrar and the Inspector of Colleges, in accordance with the new Regulations:

Provided that any act which is required by the new Regulations to be done, at, before, or after an Annual Meeting, may for this purpose be validly done, at, before, or after, a Special Meeting.

6. As soon as each of the Faculties, the Syndicate, each of the Boards of Studies and the Board of Accounts is duly constituted under Regulation 5, the corresponding body provisionally constituted under section 12 (g) of the Indian Universities Act, shall cease to exist:

Provided that each of these provisional Bodies so long as it continues to exist, shall discharge its functions in accordance with the existing Bye-laws, which shall be deemed to be in force for this purpose.

7. The Faculties, the Syndicate, the Boards of Studies, the Board of Accounts, the Library General Committee, the Transfer Committee, the Students' Residence Committee and the Library Executive Committee appointed under Regulation 5 shall continue to hold office till they are reconstituted in 1908 in accordance with the new Regulations.

8. The Registrar holding office at the commencement of the new Regulations shall continue to hold office till the Registrar appointed under Regulation 5 assumes charge. If, in the interval, there is a vacancy in the office of Registrar, the Syndicate may appoint an Acting Registrar on such terms as may be found necessary. The Registrar appointed under Regulation 5 shall continue to hold office not later than the 31st of March, 1912.

9. The Inspector of Colleges appointed under Regulation 5 shall continue to hold office not later than the Annual Meeting of the Senate in 1912.

10. The Matriculation Examination shall be held for the first time in accordance with the new Regulations in 1910.

11. The Entrance Examination in 1907, 1908, and 1909 shall be held in accordance with the existing Regulations and Rules, which, for this purpose, shall be deemed to be in force.

12. Any person who passes or has passed the Entrance Examination shall be deemed qualified for admission to any University Examination other than that mentioned in section 42 in the same manner as if he had passed the Matriculation Examination in accordance with the new Regulations.

13. The Intermediate Examination in Arts shall be held for the first time in accordance with the new Regulations in 1909.

14. The First Examination in Arts in 1907 and 1908 shall be held in accordance with existing Regulations and Rules, which, for this purpose, shall be deemed to be in force.

15. Any person who passes or has passed the First Examination in Arts shall be deemed qualified for admission to any University Examination other than that mentioned in Regulation 42 in the same manner as if he had passed the Intermediate Examination in Arts or the Intermediate Examination in Science in accordance with the new Regulations. For the purpose of the Examination mentioned in Regulation 42 of this chapter, a student who has passed the F.A. or the Intermediate in Arts, shall be deemed qualified in the same manner as a student who has matriculated in accordance with the new Regulations.

16. Any candidate who fails at the First Examination in Arts in 1908 or has failed in any previous year, or who was qualified to appear at any such examination but did not appear, or who was not sent up to any such examination by reason of deficiency in attendance at lectures or who was not permitted by the Principal of his College to appear, may be admitted to the Intermediate Examination in Arts or the Intermediate Examination in Science in 1909, provided he has prosecuted in accordance with the new Regulations, a regular course of study for one academical year in the subjects he offers. Any candidate appearing at a subsequent examination shall strictly comply with the new Regulations.

17. The B.A. Examination shall be held for the first time in accordance with the new Regulations in 1909.

18. The B.A. Examination in 1907 and 1908 shall be held in accordance with the existing Regulations and Rules, which, for this purpose, shall be deemed to be in force.

19. The M.A. Examination shall be held for the first time in accordance with the new Regulations in 1909.

20. The M.A. Examination in 1906, 1907 and 1908 shall be held in accordance with the existing Regulations and Rules, which, for this purpose, shall be deemed to be in force.

21. Any Bachelor of Science who, in or before 1908, passes or has passed the M.A. Examination in Mathematics or in any branch of Natural or Physical Science, shall be entitled to the same privileges for the purpose of admission to the University Examinations as if he had passed the M.Sc. Examination in accordance with the new Regulations.

22. The Examination for the Degree of Doctor of Philosophy shall be held for the first time in accordance with the new Regulations in 1907.

23. The Intermediate Examination in Science shall be held for the first time in accordance with the new Regulations in 1909.

24. The B.Sc. Examination shall be held for the first time in accordance with the new Regulations in 1909.

25. The B.Sc. Examination in 1907 and 1908 shall be held in accordance with the existing Regulations and Rules, which, for this purpose, shall be deemed to be in force.

26. The M.Sc. Examination shall be held for the first time in accordance with the new Regulations in 1909.

27. The Examination for the Degree of Doctor of Science shall be held for the first time in accordance with the new Regulations in 1908.

28. The Examination for the Degree of Doctor of Science in 1906 and 1907 shall be held in accordance with the existing Regulations and Rules, which, for this purpose, shall be deemed to be in force.\*

29. The Preliminary Examination in Law shall be held for the first time in accordance with the new Regulations in 1908.

30. The Final Examination in Law shall be held for the first time in accordance with the new Regulations in 1909.

31. The B.L. Examination in 1906, 1907 and 1908 shall be held in accordance with the existing Regulations and Rules, which, for this purpose, shall be deemed to be in force.

32. (i) Any candidate who fails at the B.L. Examination in 1908, or has failed in any previous year, or who was qualified to appear at any such examination but did not appear, may, in any year not later than 1912, appear at the Preliminary Examination in Law, and if he passes, may appear at the Final Examination in Law, in the same year or in any subsequent year not later than 1912.

(ii) Any candidate who is not or has not been sent up to the B.L. Examination of 1908 or of any previous year by reason of deficiency in attendance in lectures, shall be entitled to the same privileges as the candidates referred to in the preceding paragraph, provided he makes up his deficiency in accordance with the existing Regulations.

(iii) In any year subsequent to 1912 no person shall be admitted to either the Preliminary or the Final Examination in Law, except in strict conformity with the new Regulations.

33. The M. L. Examination shall be held for the first time in accordance with the new Regulations in 1907.

34. The Examination for Honours in Law in 1906 shall be held in accordance with the existing Regulations and Rules which, for this purpose, shall be deemed to be in force. Any candidate who may pass at such Examination shall be entitled to the same privileges as if he had passed the M.L. Examination in the first class under the new Regulations.

35. Up to 1907 the Degree of Doctor of Law shall be conferred in accordance with the existing Regulations, and in and after 1908 in accordance with the new Regulations.

36. The Preliminary Scientific L.M.S. Examination in accordance with the existing Regulations and Rules shall be held for the last time in 1907, and for this purpose those Regulations and Rules shall be deemed to be in force.

37. The First L.M.S. Examination in 1907, 1908 and 1909 (and in no subsequent year), shall be held in accordance with the existing Regulations and Rules, which, for this purpose, shall be deemed to be in force.

38. The Second L.M.S. Examination in 1907, 1908, 1909, 1910 and 1911 (and in no subsequent year) shall be held in accordance with the existing Regulations and Rules, which, for this purpose, shall be deemed to be in force.

39. Any candidate who fails in the Preliminary Scientific L.M.S. Examination in 1907 may appear at the Preliminary Scientific M.B. Examination in 1908 or 1909, provided he attends in an affiliated College a regular course of lectures for one academical year, in the subjects in which he has failed as also in the additional subjects in which he has not previously attended any lectures. If any such candidate attains the standard laid down in the new Regulations for the Preliminary Scientific M.B. Examination, he shall be declared to have passed that examination.

40. Any candidate who fails in the First L.M.S. Examination in 1909 may appear at the First M.B. Examination in 1910 or 1911, provided he attends in an affiliated College a regular course of lectures for one academical year, (i) in the subjects in



which he has failed, (ii) in any additional subjects in which he has not previously attended any lectures, and (iii) in the subject of Zoology as prescribed for the Preliminary Scientific M.B. Examination under the new Regulations. If such candidate attains the standard laid down in the new Regulations for the First M.B. Examination and also passes an examination in Zoology in the standard of the Preliminary Scientific M.B. Examination, he shall be declared to have passed the First M.B. Examination.

41. Any candidate who fails in the Second L.M.S. Examination in 1911 may appear at the Second M.B. Examination in 1912 or 1913, provided he attends in an affiliated College a regular course of lectures for one academical year in the subjects in which he has failed. If such candidate attains the standard laid down in the new Regulations for the Second M.B. Examination (Parts I and II or Part II only, as the case may be), he shall be granted a certificate of having passed the Second L.M.S. Examination.

42. The Preliminary Scientific M.B. Examination shall be held for the first time in accordance with the new Regulations in 1908. Provided that at the Examinations held in 1909 and 1910 no one shall be admitted who has not passed the F.A. Examination or the Intermediate in Arts or the Intermediate in Science.

43. The Preliminary Scientific M.B. Examination in 1907 and 1908 shall be held in accordance with the existing Regulations and Rules, which, for this purpose, shall be deemed to be in force.

In 1908 there shall be two Examinations, one in accordance with the existing Regulations and the other in accordance with the new Regulations. For the latter no one shall be eligible who has not passed the F.A. Examination.

44. The First M.B. Examination shall be held for the first time in accordance with the new Regulations in 1910.

45. The First M.B. Examination in 1907, 1908 and 1909 shall be held in accordance with the existing Regulations and Rules, which, for this purpose, shall be deemed to be in force.

46. The Final M.B. Examination shall be held for the first time in accordance with the new Regulations in 1913.

47. The Second M.B. Examination in 1907-1912 shall be held in accordance with the existing Regulations and Rules, which, for this purpose, shall be deemed to be in force.

48. The Examinations for Honours in Medicine, for the Degrees of Doctor of Medicine, Master of Surgery and Master of Obstetrics, and for the Diploma in Public Health, shall be held for the first time in accordance with the new Regulations in 1907.

49. The Examination for the Degree of Doctor of Medicine in 1906 shall be held in accordance with the existing Regulations, which, for this purpose, shall be deemed to be in force.

50. The Intermediate Examination in Engineering shall be held for the first time in accordance with the new Regulations in 1909.

51. In 1907, 1908 and 1909 the First Examination in Engineering shall be held in accordance with the existing Regulations and Rules, which, for this purpose, shall be deemed to be in force.

52. In 1910 and 1911, the First Examination in Engineering shall be held in accordance with the existing Regulations and Rules, which, for this purpose, shall be deemed to be in force:

Provided, however, that at the examination in either of these years, only the following classes of candidates shall be allowed to appear:—

(a) Candidates who have failed at any previous F. E. Examination.

(b) Candidates who have not passed any examination higher than the Entrance or Matriculation Examination.

53. Any candidate who fails at the F. E. Examination in 1911 may be admitted to the Intermediate Examination in Engineering in 1912 or 1913.

54. Any person who passes or has passed the F.E. Examination shall be deemed qualified for admission to University Examinations in the same manner as if he had passed the Intermediate Examinations in Engineering in accordance with the new Regulations.

55. The B. E. Examination shall be held for the first time in accordance with the new Regulations in 1911.

56. The B. E. Examination in 1907, 1908, 1909, and 1910 and the L. E. Examination in 1907-1912, shall be held in accordance with the existing Regulations and Rules, which, for this purpose, shall be deemed to be in force.

57. The Examination for Honours in Engineering shall be held for the last time in 1907 in accordance with the existing Regulations, which, for this purpose, shall be deemed to be in force.

58. Up to 1909 the Degree of Master in Engineering shall be conferred in accordance with the existing Regulations, which, for this purpose, shall be deemed to be in force.

59. The Degree of Doctor of Science (Engineering) may be conferred in 1907 in accordance with the new Regulations.

60. The Examination for Licentiate in Teaching and Bachelor of Teaching shall be held for the first time in 1908.

61. As soon as practicable after the commencement of the new Regulations, the Syndicate shall frame, subject to the approval of the Senate:—

- (a) A revised body of Rules for the conduct of the examinations which, according to the preceding Regulations, have to be held in accordance with the existing Regulations; and
- (b) A body of Rules for the conduct of the examinations to be held in accordance with the new Regulations:

Provided that nothing in the Rules made under (a) shall contravene the existing Regulations, and nothing in the Rules made under (b) shall contravene the new Regulations.

62. Nothing in the Regulations contained in this Chapter shall be deemed to prohibit any alteration in the existing Regulations and Rules, provided such alteration is made by the Body competent in that behalf, and in the same manner prescribed by the new Regulations.

63. Within eight weeks from the date when these Regulations come into force the Principal of every affiliated College shall forward to the Registrar the name of every student on the rolls of the College, together with the registration fee of Rs. 2 required for matriculation by Regulation 6 of Chapter XV. The Registrar shall, upon receipt of the fee, enter the name of every such student on the Register of University students.

64. In any case not covered by the preceding Regulations of this Chapter the Syndicate shall give such directions as may be justified by the special circumstances of the case.

## CHAPTER XXX.

### MATRICULATION EXAMINATION.

1. The Matriculation Examination shall be held annually in Calcutta and in such other places as shall, from time to time, be appointed by the Syndicate, the approximate date to be notified in the Calendar.

2. Ordinarily, only students who have been educated for at least one school year previous to the date of the Matriculation Examination at a school recognised by the Calcutta University for such purpose, shall be admitted to the Matriculation Examination. Private candidates, who have not attended any school for at least one year previous to the Examination, shall also be admitted to the Examination, provided that (a) before appearing at such Examination they have passed a preliminary

test held for such purpose by a Government Inspector of Schools or under his orders, and (b) satisfactory evidence is adduced before the Inspector that the candidate has prosecuted a regular course of study, and has been subject to proper discipline.

3. No one shall be admitted to the Matriculation Examination, unless he shall have completed the age of fifteen years on the first day of the month in which he appears at the Examination.

4. Every candidate sent up for the Matriculation Examination by a recognised school shall be required to produce a certificate (a) of good conduct, (b) of diligent and regular study, (c) of having satisfactorily passed periodical school examinations and other tests, (d) of probability of passing the examination.

5. Every candidate for admission to the Matriculation Examination shall send in his application with a certificate in the form prescribed by the Syndicate, either to the Registrar or to a local officer recognised by the Syndicate. Every such application must reach the office of the Registrar at least six weeks before the date fixed for the commencement of the examination.

6. A fee of fifteen rupees shall be forwarded by each candidate with his application. A candidate who fails to pass, or to present himself for examination, shall not be entitled to claim a refund of the fee. He may be admitted to one or more subsequent Matriculation Examinations, subject to the conditions laid down in these Regulations.

7. The Matriculation Examination shall be conducted by means of printed papers, the same papers being used at every place at which the Examination is held.

8. The Matriculation Examination shall be a general test of fitness for a course of University studies.

9. Candidates for the Matriculation Examination shall be examined in the following subjects:—

- |                |     |     |     |                    |
|----------------|-----|-----|-----|--------------------|
| 1. English     | ... | ... | ... | <i>Two papers.</i> |
| 2. Mathematics | ... | ... | ... | <i>One paper.</i>  |

3. One of the following languages:—

Sanskrit, Pali, Arabic, Persian, Hebrew, Classical Armenian, Classical Tibetan, Greek, Latin, French, German, Syriac, Portuguese, Bengali, Hindi, Urdu, Assamese, and Burmese, provided that a candidate may take up one of the last six languages, only if it is not his vernacular \*

*One paper.*

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\* Also Bengali, Assamese, Burmese, Hindi, Khasi, Urdu, Uriya, Tamil, Telugu, French and German for Female candidates (sanctioned by the Syndicate).

Candidates who take up French or German as their Second Language, shall not be allowed to take up French or German as their vernacular.

4. One of the following vernacular languages :—

Bengali, Hindi, Uriya, Assamese, Urdu, Burmese,  
Modern Armenian, Modern Tibetan, Khasi,  
Nepali (Parbatia), Telugu, Marathi, Gujrathi,  
Maithili, Tamil, Kanarese, Malayalam, Sinhalese,  
Garó, Manipuri, Portuguese ... *One paper.*

The Syndicate shall have power to add to this list.

If the vernacular of a candidate is a language not included in the above list, he shall have an alternative paper in :—

- (a) English composition, or
- (b) French, or
- (c) German.

5 and 6. Two out of the following :—

- (i) Additional Mathematics ... *One paper.*
- (ii) An additional paper in the classical language, taken up as subject No. 3 ... *One paper.*
- (iii) History of India, including a short account of the Administration of British India and of the Progress of India under British Rule ... *One paper.*
- (iv) Outlines of General Geography, including the elements of Mathematical and Physical Geography : with the Geography of India in fuller detail ... *One paper.*
- (v) Elementary Mechanics ... *One paper.*
- (vi) \*Elementary Hygiene ... *One paper.*
- (vii) Business Method and Correspondence ... *One paper.*
- (viii) Commercial Geography ... *One paper.*

Candidates who take up (iii) or (vi) will be permitted to submit their answers in that subject in one of the following languages :—

English, Bengali, Hindi, Uriya, Assamese, Urdu, Burmese, or Modern Armenian.

Candidates who are certified to belong to the Hill Tribes or other Aboriginal races are allowed the choice of the following combination of subjects :—

(1) English, (2) Mathematics, (3) A Vernacular Language or the Alternative Paper in English Composition, French or German as specified above, (4) History, (5) Geography, (6) Mechanics or Additional Mathematics.

\* No school will be allowed to present a candidate in this subject unless the Syndicate are satisfied that suitable arrangements have been made for teaching it.

Each paper shall be of three hours and shall carry 100 marks.

10. As soon as possible after the Examination the Syndicate shall publish a list of the candidates who have passed arranged in three divisions each in alphabetical order. Every candidate shall on passing receive a certificate in the form entered in Appendix A.

11. The limits of the subjects are defined below; and books shall be recommended, when necessary, to indicate the standard and extent of knowledge required in the different subjects.

### ENGLISH.

1. (i) The Matriculation Examination in English shall be a test (a) of ability to write clear, simple and correct English, (b) of intelligent comprehension of plain modern English on familiar subjects.

(ii) The course in English shall include select pieces in prose and verse to be prescribed by the Syndicate on the recommendation of the Board of Studies in English. The Syndicate shall also draw up, on the recommendation of the Board, a small selection of books as showing the standard up to which students will be expected to have read.

(iii) The first paper in English shall include passages in one of the following vernaculars for translation into English :—

Bengali, Hindi, Uriya, Urdu, Burmese, Modern Armenian, Modern Tibetan, Parbatia, Assamese, Khasi, Tamil, Gujrathi, French, Telugu, Malayalam, Marathi, Garo, Lushai, Kanarese, Sinhalese, Manipuri, Chinese and Mundari.

The Syndicate shall have power to add to this list.

(iv) Questions shall be set under the following heads, namely :—

(a) Passages from prescribed texts.

(i) Simple unseen passages.

(c) Grammar and Composition.

(d) Translation from one of the recognised vernaculars into English.

(e) Simple Essays.

2. Candidates may be asked to explain, summarise, or paraphrase the passages set, or to answer any question thereon which will test their understanding of the meaning or the construction. Historical, geographical, and literary allusions shall be excluded.

3. The head " Grammar and Composition " shall include (a) questions involving the practical application of the elementary rules of Grammar, (b) questions on the right use of words and phrases, and (c) exercises in composition.

4. Passages for translation may be narrative or descriptive, or may consist of simple conversations on ordinary subjects. They must be such as may be easily rendered from the one language into the other. They shall, where possible, be taken from recognised vernacular authors; and they shall not consist of any translation made for the purpose of the examination, from English into the vernacular.

5. Two essays shall be set, giving in the one case not merely the subject, but also headings under the subject, for the candidates to expand in their own words, and in the other merely the subject without headings.

6. The distribution of the heads and of marks in the two papers shall be as follows:—

*Paper I.*—Translation from a vernacular into English;  
                   three short passages shall be set, of which  
                   two only must be attempted, each carry-  
                   ing twenty marks ... 40 marks.  
   Two Essays, each carrying fifteen marks 30 marks.  
   Grammar and Composition ... 30 marks.

*Paper II.*—(a) Questions on the subject-matter and  
                   on the language of the prescribed texts 50 marks.  
           (b) Unseen passages ... 50 marks.

## MATHEMATICS.

### *Compulsory paper.*

(A) *Arithmetic.*—The four Simple Rules, Vulgar and Decimal Fractions, Reductions, Practice, Proportion, Simple Interest. Problems more easily solvable by Algebra should not be required to be solved arithmetically.

(B) *Algebra.*—The four Simple Rules, Proportion, Simple Equations, Greatest Common Measure, Least Common Multiple, Graphs of Simple Equations.

(C) *Geometry*—

### PRACTICAL.

Bisection of angles and of straight lines.  
 Construction of perpendiculars to straight lines.  
 Construction of an angle equal to a given angle.  
 Construction of parallels to a given straight line.  
 Construction of triangles with given parts.  
 Division of a straight line into a given number of equal parts.  
 Construction of a parallelogram equal to a given triangle and having one of its angles equal to a given angle.  
 Construction of a triangle equal in area to a given rectilineal figure.

Construction of a tangent to a circle.

Easy extensions of these constructions may be given as problems.

Candidates may be required to give the reasons for any particular construction involved in any question.

*Every candidate is required to provide himself with the following :—a hard pencil, dividers, pencil-compasses, and a straight ruler showing centimetres and inches.*

#### THEORETICAL.

##### *Angles at a point.*

If a straight line stands on another straight line, the sum of the two angles so formed is equal to two right angles, and the converse.

If two straight lines intersect, the vertically opposite angles are equal.

##### *Parallel straight lines.*

If a straight line, cutting two other straight lines, makes—

- (i) the alternate angles equal,
- (ii) two corresponding angles equal,
- (iii) the interior angles on the same side of the line supplementary,

then the two straight lines are parallel; and the converse.

Straight lines which are parallel to the same straight line are parallel to one another.

##### *Triangles and rectilineal figures.*

The sum of the angles of a triangle is equal to two right angles.

If the sides of a convex polygon are produced in order, the sum of the angles so formed is equal to four right angles.

Two triangles are equal in every respect—

- (i) if two sides and the included angle of one triangle are respectively equal to two sides and the included angle of the other.
- (ii) if two angles and a side of the one triangle are respectively equal to two angles and the corresponding side of the other.

If two sides of a triangle are equal, the angles opposite to these sides are equal, and the converse.

Two triangles are equal in every respect, if the three sides of one triangle are respectively equal to the three sides of the other.



Two right-angled triangles are equal in every respect, if they have their hypotenuses equal, and one side of the one equal to one side of the other.

If two sides of a triangle are unequal, the greater side has the greater angle opposite to it, and the converse.

Any two sides of a triangle are together greater than the third.

Of all the straight lines that can be drawn to a given straight line from a given point outside it, the perpendicular is the shortest.

The opposite sides and angles of a parallelogram are equal: each diagonal bisects the parallelogram, and the diagonals bisect one another.

If there are three or more parallel straight lines, and the intercepts made by them on any straight line that cuts them are equal, then the corresponding intercepts on any other straight line that cuts them are equal.

### *Areas.*

Parallelograms on the same or equal bases and of the same altitude are equal in area.

Triangles on the same or equal bases and of the same altitude are equal in area.

Equal triangles on the same or equal bases are of the same altitude.

Illustrations and explanations of the geometrical theorems corresponding to the following algebraical identities:—

$$k(a + b + c \dots) = ka + kb + kc + \dots$$

$$(a + b)^2 = a(a + b) + b(a + b).$$

$$a(a + b) = a^2 + ab.$$

$$(a + b)^2 = a^2 + 2ab + b^2.$$

$$(a - b)^2 = a^2 - 2ab + b^2.$$

$$a^2 - b^2 = (a + b)(a - b).$$

The square on a side of a triangle is greater than, equal to or less than the sum of the squares on the other two sides, according as the angle contained by those sides is obtuse, right, or acute. The difference in the cases of inequality is twice the rectangle contained by one of the two sides and the projection on it of the other.

### *Loci.*

The locus of a point which is equidistant from two fixed points is the perpendicular bisector of the straight line joining the two fixed points.

The locus of a point which is equidistant from two intersecting straight lines consists of the pair of straight lines which bisect the angles between the two given lines.

### *The Circle.*

A straight line drawn from the centre of a circle to bisect a chord which is not a diameter, is at right angles to the chord; conversely, the perpendicular to a chord from the centre bisects the chord.

There is one circle, and one only, which passes through three given points not in a straight line.

In equal circles (or in the same circle) (i) if two arcs subtend equal angles at the centre, they are equal, (ii) conversely, if two arcs are equal, they subtend equal angles at the centre.

In equal circles (or in the same circle) (i) if two chords are equal, they cut off equal arcs, (ii) conversely, if two arcs are equal, the chords of the arcs are equal.

Equal chords of a circle are equidistant from the centre: and the converse.

The tangent at any point of a circle is perpendicular to the radius through the point.

If two tangents are drawn to a circle from an external point, (i) they are equal, (ii) they subtend equal angles at the centre of the circle.

If two circles touch, the point of contact lies on the straight line through the centres.

The angle which an arc of a circle subtends at the centre is double that which it subtends at any point on the remaining part of the circumference.

Angles in the same segment of a circle are equal; and if the line joining two points subtends equal angles at two other points on the same side of it, the four points lie on a circle.

The angle in a semi-circle is a right angle; the angle in a segment greater than a semi-circle is less than a right angle; and the angle in a segment less than a semi-circle is greater than a right angle.

The opposite angles of any quadrilateral inscribed in a circle are supplementary; and the converse.

If a straight line touch a circle, and from the point of contact a chord be drawn, the angles which this chord makes with the tangent are equal to the angles in the alternate segments.

If two chords of a circle intersect either inside or outside the circle, the rectangle contained by the parts of the one is equal to the rectangle contained by the parts of the other.

Each question on Theoretical Geometry shall consist of a theorem contained in the above schedule together with an easy deduction.

Any proof of a proposition shall be accepted, which appears to the Examiners to form part of a systematic treatment of the subject, but proofs of theorems, should, as far as possible, be based on first principles; the order in which the theorems are stated in the above schedule is not to be regarded as essential.

In the proof of theorems and deductions from them, it shall be permissible to use hypothetical constructions.

The ordinary symbolical abbreviations may be used.

### SANSKRIT.

#### *Compulsory Paper.*

1. The course shall include simple pieces in prose and verse selected from the following works:—Hitopadesa, Panchatantra, Ramayana, Mahabharata and Vishnu Purana. To the above list other works may, from time to time, be added by the Syndicate on the recommendation of the Board of Studies in Sanskrit. The selections shall be prescribed and prepared by, and be the property of the University, and they shall be notified two years before the examination for which they are prescribed.

2. A book of Elementary Sanskrit Grammar shall also be prepared and prescribed by the University and be its property.

3. The marks in the compulsory paper in Sanskrit shall be distributed as follows:—

- (i) Passages from the prescribed texts for translation into English, together with (a) grammatical questions, and (b) questions on the subject-matter of the texts.

50 marks.

Under this head simple translation from the text shall in no case carry more than 25 marks.

- (ii) Questions involving the practical use of the elementary rules of Grammar, including passages containing grammatical errors for correction ... 25 marks.
- (iii) Translation of simple sentences from English into Sanskrit; such sentences shall in no case be translations of portions of the prescribed texts ... 25 marks.

### PALI.

#### *Compulsory Paper.*

1. The course in Pali shall include simple pieces in prose and poetry selected from the undermentioned works of the Khuddaka Nikāya of the Sutta Pitaka and from the Dipavamsa:—

*Prose*—Jātaka.

*Poetry*—Khuddakapāṭha, the Dipavamsa.

To the above list other works may, from time to time, be added by the Syndicate on the recommendation of the Board of Studies in Sanskrit Languages.

The selections shall be notified two years before the examination for which they are prescribed.

2. Grammars will be recommended from time to time and a general knowledge of the following shall be demanded from the candidate :—(a) *Sandhi-kappa*, (b) *Nāma-kappa*, including *Sabda-rupa*, *Kāraka*, *Samāsa* and *Taddhita*, (c) *Akhyāta* and (d) *Kita-kappa* excluding *Unādi*.

3. The marks in the compulsory paper in Pali shall be distributed as follows :—

- (1) Passages from the prescribed text for translation into English, together with (a) grammatical questions and (b) questions on the subject-matter of the texts ... 50 marks.

Under this head simple translation from the text shall in no case carry more than 25 marks.

- (2) Questions involving the practical use of the elementary rules of Grammar, including passages containing grammatical errors for correction ... 25 marks.
- (3) Translation of simple sentences from English into Pali. Such sentences shall in no case be translations of portions of the prescribed texts ... 25 marks.

## ARABIC.

### *Compulsory Paper.*

1. The course in Arabic shall include selections from any or all of the following works :—

- (1) *Qoran*.
- (2) *Alf Layla*.
- (3) *Tarikh Tabari*.
- (4) *Ar-reuzūt-ul Adabiyya* by 'Irāin.'
- (5) *Jawahirul-Adab* by Hashemi.
- (6) *Hadiqatul Adab* by Ibrahim Dasuqi.
- (7) *Majaniul Adab*, Parts I and II, Shaikh.
- (8) *Nakherb-ul Mulah*, Part I.
- (9) *Diwan Ali*.
- (10) *Nafhatul yemen*.

The selections, which will be chosen with a view to avoiding difficulty and obscure passages, shall be prepared by and be the property of the University.

2. The course shall include the general principles of Arabic Grammar according to modern methods; and the University

shall prepare and prescribe an Arabic Grammar, which shall be its property.

The Boards of Studies concerned may make such modifications in the list of books as may seem to them desirable.

The scope of the subject of each paper shall from time to time be defined by the Board concerned and the distribution of marks may be modified in such manner as may seem desirable to the Board.

3. The marks in the compulsory paper in Arabic shall be distributed as follows:—

- (1) Passages from the prescribed texts for translation into English, together with (a) grammatical questions, and (b) questions on the subject-matter of the texts ... 50 marks.

Under this head, simple translation from the text shall in no case carry more than 25 marks.

- (2) Questions involving the practical use of the elementary rules of Grammar, including passages containing grammatical errors for correction ... 25 marks.
- (3) Translation of simple sentences from English into Arabic; such sentences shall in no case be translations of portions of the prescribed texts ... 25 marks.

## PERSIAN.

### *Compulsory Paper.*

1. The course in Persian shall include selections from any or all of the following works:—

#### PROSE.

- (1) *Gulestan*.
- (2) *Baharestan*.
- (3) *Safar Namah* of Nasir Khusrau.
- (4) *Parishan* of Qa'ani.
- (5) *Ahwali Kalambus* by Mirza Mohomed Shirazi.
- (6) *Chingiz Khan Nama* by Khawand Shah.

#### POETRY.

- (1) *Paudnama* of Altar.
- (2) *Masnauyyat* of Hazin.
- (3) *Diwan* of Khusrau of Delhi.
- (4) *Bustan*.
- (5) *Anisul Arifin* by Md. Hussain Shirazi.
- (6) *Biwan-i-Ubaydi*.
- (7) *Mannwa Salwa* by Mufti Md. Abbas.

The selections shall be prescribed and prepared by the University and be its property.

2. The course shall further include the principles of Persian Grammar and composition.

Grammars shall be recommended by the Board of Studies concerned.

The Boards of Studies concerned may make such modifications in the list of books as may seem to them desirable.

The scope of the subject of each paper shall from time to time be defined by the Board concerned and the distribution of marks may be modified in such manner as may seem desirable to the Board.

3. The marks in the compulsory paper shall be distributed as follows:—

- (1) Passages from the prescribed texts for translation into English, together with (a) grammatical questions, and (b) questions on the subject-matter of the texts ... 50 marks.

Simple translation from the text shall in no case carry more than 25 marks.

- (2) Questions involving the practical use of the elementary rules of Grammar, including passages containing grammatical errors for correction ... 25 marks.
- (3) Translation of simple sentences from English into Persian; such sentences shall in no case be translations of portions of the prescribed texts ... 25 marks.

## ARMENIAN.

### *Compulsory Paper.*

1. The course shall consist of the following:—

Elishe's History of the War of the Vardanians, Parts I and II.

Elishe Vardapiet Doorian's "Course of Classical Armenian," Part I [Prose and Verse].

2. Grammars will be recommended by the Board of Studies.

3. The marks in the compulsory paper in Armenian shall be distributed as follows:—

- (1) Passages from the prescribed texts for translation into English, together with (a) grammatical questions, and (b) questions on the subject-matter of the texts ... 50 marks.

Under this head, simple translation from the text shall in no case carry more than 25 marks.

- (2) Questions involving the practical use of the elementary rules of Grammar, including passages containing grammatical errors for correction ... 25 marks.
- (3) Translation of simple sentences from English into Armenian; such sentences shall in no case be translations of portions of the prescribed texts ... 25 marks.

## HEBREW.

### *Compulsory Paper.*

1. The course shall include selections from Genesis, Isaiah and the Psalms.

To the above list other portions of the Old Testament may from time to time be added by the Syndicate on the recommendation of the Board of Studies in Hebrew, who shall also recommend Grammars. The course shall be notified two years before the Examination for which it is prescribed.

2. The marks in the compulsory paper in Hebrew shall be distributed as follows:—

- (1) Passages from the prescribed texts for translation into English, together with (a) grammatical questions, and (b) questions on the subject-matter of the texts ... 50 marks.

Under this head, simple translation from the text shall in no case carry more than 25 marks.

- (2) Questions involving the practical use of the elementary rules of Grammar, including passages containing grammatical errors for correction ... 25 marks.
- (3) Translation of simple sentences from English into Hebrew; such sentences shall in no case be translations of portions of the prescribed texts ... 25 marks.

## GREEK.

### *Compulsory Paper.*

1. The course in prose shall consist of suitable portions of Xenophon, Lucian, and the New Testament.

The course in verse shall consist of suitable portions of Euripides. The course shall be notified two years before the examination for which it is prescribed.

2. The marks in the compulsory paper in Greek shall be distributed as follows:—

- (1) Passages from the prescribed texts for translation into English, together with (a) grammatical questions, and (b) questions on the subject-matter of the texts ... 50 marks.

Under this head, simple translation from the text shall in no case carry more than 25 marks.

- (2) Translation of unseen passages from Greek into English ... 35 marks.
- (3) Translation from English into Greek ... 15 marks.

### LATIN.

#### *Compulsory Paper.*

1. The course in prose shall consist of suitable portions of Cæsar or Sallust.

The course in verse shall consist of suitable portions of Ovid or Virgil's Æneid. The course shall be notified two years before the examination for which it is prescribed.

2. The marks in the compulsory paper in Latin shall be distributed as follows:—

- (1) Passages from the prescribed texts for translation into English, together with (a) grammatical questions, and (b) questions on the subject-matter of the texts ... 50 marks.

Under this head, simple translation from the text shall in no case carry more than 25 marks.

- (2) Translation of unseen passages from Latin into English ... 25 marks.
- (3) Translation from English into Latin ... 25 marks.

### FRENCH.

#### *Compulsory Paper.*

1. The course in French shall consist of one work in prose and selections in verse from one or more writers, which shall be prescribed from time to time by the Board of Studies concerned. The course shall include French Grammar.

2. The marks in the compulsory paper in French shall be distributed as follows:—

- (1) Passages from the prescribed texts for translation into English, together with (a) grammatical questions, and (b) questions on the subject-matter of the texts ... 50 marks.



Under this head, simple translation from the text shall in no case carry more than 25 marks.

- |   |        |           |
|---|--------|-----------|
| (2) Translation of unseen passages from French into English | ... .. | 25 marks. |
| (3) Translation from English into French                    | ... .. | 25 marks. |

### VERNACULARS.

1. The course in Vernacular shall include select texts in prose and verse to be prescribed by the Syndicate on the recommendation of the Board of Studies concerned.

The Syndicate shall also draw up, on the recommendation of the Board, a small selection of books by notable authors as showing the standard up to which students will be expected to have read.

2. The examination shall include :

- |   |           |           |
|---|-----------|-----------|
| (a) Questions on the subject-matter and on the language of the prescribed texts | ... ..    | 40 marks. |
| (b) An Unseen Passage to be summarised or amplified in the Vernacular           | ... ..    | 15 marks. |
| (c) Translation from English into Vernacular                                    | 15 ..     |           |
| (d) Questions on Composition  | ... 10 .. |           |
| (e) An Essay in Vernacular—headings being given                                 | ... 20 .. |           |

3. The unseen passage shall not exceed in difficulty the

- |  |
|--|
| (a) Vernacular texts prescribed for the examination.                                       |
| (b) Questions shall not be set on the history of language or literature of the Vernacular. |

The following Syllabus in Bengali has been prescribed by the Syndicate for the Matriculation Examination of Female Candidates :—

#### *Compulsory Paper.*

1. The course shall include books in Prose and Verse, to be prescribed by the Syndicate on the recommendation of the Board of Studies in Sanskrit Languages.

2. A book on Bengali Grammar shall also be prescribed or recommended by the University.

3. The marks for the compulsory paper in Bengali shall be distributed as follows :—

- |   |        |           |
|---|--------|-----------|
| (i) Passages from the prescribed texts for translation into English together with (a) grammatical questions, and (b) questions on the subject-matter of the texts | ... .. | 50 marks. |
|---|--------|-----------|

Under this head simple translation from the texts shall in no case carry more than 25 marks.

- |  |        |           |
|--|--------|-----------|
| (ii) Questions involving the practical use of the elementary rules of Grammar, including passages containing grammatical errors for correction | ... .. | 25 marks. |
| (iii) Easy unseen passages in modern Bengali Prose for translation into English  | ... .. | 25 marks. |

4. The Alternative Paper in English (for candidates whose Vernacular is a language not included in the prescribed list) shall include:

- (a) questions on selected texts in prose and verse to be prescribed by the Syndicate on the recommendation of the Board of Studies in English; and
- (b) questions on composition, including Rhetoric and Prosody.

5. The papers in French and German shall consist of prose passages for translation into English, and one or more easy pieces for translation from English.

No text-books shall be prescribed, but a number of works shall from time to time be recommended as indicating the standard up to which candidates will be expected to have read.

## MATHEMATICS.

### *Additional paper.*

In addition to the Syllabus for the Compulsory paper the following:—

- (A) *Arithmetic*.—Extraction of Square Root; Exercise in the Metric System; Approximation to a specified degree of accuracy.
- (B) *Algebra*.—Quadratic Equations with one unknown quantity; Extraction of Square Root; Graphs of Pure Quadratic Equations (excluding constructions with different scales along two axes); Arithmetical and Geometrical Progressions; the Elementary Laws of Indices.
- (C) *Geometry*.—

## PRACTICAL.

Simple cases of the construction of circles satisfying given conditions.

Construction of regular figures of 3, 4, 5, or 6 sides in or about a given circle.

Construction of a square equal in area to a given rectangle.

## THEORETICAL.

### *Proportion: Similar Triangles.*

If a straight line is drawn parallel to one side of a triangle, the other two sides are divided proportionally; and the converse.

If two triangles are equiangular, their corresponding sides are proportional; and the converse.

If two triangles have one angle of the one equal to one angle of the other, and the sides about these equal angles proportional, the triangles are similar.

If a polygon is divided into triangles by a line joining a given point to its vertices, any similar polygon can be divided into corresponding similar triangles.

The ratio of the areas of two similar triangles or of two similar polygons, is equal to the ratio of the squares on the corresponding sides.

The internal bisector of an angle of a triangle divides the opposite side internally in the ratio of the sides containing the angle; and likewise the external bisector externally.

### SANSKRIT.

#### *Additional paper.*

In the additional paper in Pali the marks shall be distributed in the following manner:—

- |   |     |     |               |
|---|-----|-----|---------------|
| (1) Further questions on the text, in which simple translation from the text shall not carry more than 10 marks | ... | ... | ... 20 marks. |
| (2) Simple unseen passages for translation from Sanskrit into English   | ... | ... | ... 30 marks. |
| (3) Questions on Grammar  | ... | ... | ... 25 marks. |
| (4) Translation from English into Sanskrit  | ... | ... | ... 25 marks. |

### PALI.

#### *Additional Paper.*

In the additional paper in Pali the marks shall be distributed in the following manner:—

- |   |     |     |               |
|---|-----|-----|---------------|
| (1) Further questions on the text, in which simple translation from the text shall not carry more than 10 marks | ... | ... | ... 20 marks. |
| (2) Simple unseen passages for translation from Pali into English   | ... | ... | ... 30 marks. |
| (3) Questions on Grammar  | ... | ... | ... 25 marks. |
| (4) Translation from English into Pali  | ... | ... | ... 25 marks. |

### ARABIC.

#### *Additional Paper.*

In the additional paper in Arabic the marks shall be distributed in the following manner:—

- |   |     |     |               |
|---|-----|-----|---------------|
| (1) Further questions on the text, in which simple translation from the text shall not carry more than 10 marks | ... | ... | ... 20 marks. |
|---|-----|-----|---------------|

- |   |     |     |     |           |
|---|-----|-----|-----|-----------|
| (2) Simple unseen passages for translation from Arabic into English | ... | ... | ... | 80 marks. |
| (3) Questions on Grammar  | ... | ... | ... | 25 marks. |
| (4) Translation from English into Arabic                            | ... | ... | ... | 25 marks. |

## PERSIAN.

*Additional Paper.*

In the additional paper in Persian the marks shall be distributed in the following manner :—

- |   |     |     |     |           |
|---|-----|-----|-----|-----------|
| (1) Further questions on the text, in which simple translation from the text shall not carry more than 10 marks | ... | ... | ... | 20 marks. |
| (2) Simple unseen passages for translation from Persian into English  | ... | ... | ... | 30 marks. |
| (3) Questions on Persian Grammar  | ... | ... | ... | 15 marks. |
| (4) Translation from English into Persian   | ... | ... | ... | 35 marks. |

## ARMENIAN.

*Additional Paper.*

In the additional paper in Armenian the marks shall be distributed in the following manner :—

- |   |     |     |     |           |
|---|-----|-----|-----|-----------|
| (1) Further questions on the text, in which simple translation from the text shall not carry more than 10 marks | ... | ... | ... | 20 marks. |
| (2) Simple unseen passages for translation from Armenian into English   | ... | ... | ... | 30 marks. |
| (3) Questions on Grammar  | ... | ... | ... | 25 marks. |
| (4) Translation from English into Armenian  | ... | ... | ... | 25 marks. |

## HEBREW.

*Additional Paper.*

In the additional paper in Hebrew the marks shall be distributed in the following manner :—

- |   |     |     |     |           |
|---|-----|-----|-----|-----------|
| (1) Further questions on the text, in which simple translation from the text shall not carry more than 10 marks | ... | ... | ... | 20 marks. |
| (2) Simple unseen passages for translation from Hebrew into English   | ... | ... | ... | 30 marks. |
| (3) Questions on Grammar  | ... | ... | ... | 25 marks. |
| (4) Translation from English into Hebrew  | ... | ... | ... | 25 marks. |

## LATIN AND GREEK.

*Additional Paper.*

In the additional papers in Latin and Greek the marks shall be distributed in the following manner :—

- |   |        |           |
|---|--------|-----------|
| (1) Further questions on the text, in which simple translation from the text shall not carry more than 10 marks | ...    | 20 marks. |
| (2) Unseen passages from Greek or Latin into English  | ... .. | 30 marks. |
| (3) Unseen passages from English into Greek or Latin  | ... .. | 30 marks. |
| (4) Questions on Grammar  | ... .. | 20 marks. |

## FRENCH.

*Additional Paper.*

In the additional paper in French the marks shall be distributed in the following manner :—

- |   |        |           |
|---|--------|-----------|
| (1) Further questions on the text, in which simple translation from the text shall not carry more than 10 marks | ... .. | 20 marks. |
| (2) Unseen passages from French into English  | ...    | 30 marks. |
| (3) Unseen passages from English into French  | ...    | 30 marks. |
| (4) Questions on Grammar  | ... .. | 20 marks. |

## HISTORY.

## HISTORY OF INDIA.

- The physical features of the country.
- The aborigines of India. Immigrations from the north-east and north-west.
- The Aryans. The Indo-Aryans.
- The Vedas. Relation of the Rig-Veda to other Vedas.
- The Brahmanas. The Smritis, Manu.
- The caste system.
- Buddha and Buddhism.
- Mahavira and the Jains.
- The kingdoms of Kosala and Magadha : the empire of the Nandas.
- Invasion of Alexander the Great.
- Accounts of India given by Greek writers.
- The Maurya empire. Chandra-Gupta. Asoka.
- The Kusana empire ; Kaniksha. The Saka era. The Gupta empire ; Buddhist architecture and the Fine Arts.

Chinese pilgrims. Kalidas. Vikramaditya ; the Vikrama era.

Rise of the Rajputs.

Mahomedan conquest of Sind and the Punjab ; Mahmud of Gazni.

Hindu civilisation on the eve of the Mahomedan rule in India.

The Pathan dynasties. Muhammad Ghori. Qutb-ud-Din. Altamish. Rizia. Mogul invasion.

Conquest of Gujarat, Malwah and the Deccan ; incursions into Southern India. Ala-ud-Din.

The Tughlak dynasty. Muhammad Tughlak. Firuz Tughlak. Timur's invasion. Break-up of the Pathan empire. The Mahomedan kingdoms of Delhi, Bengal, Jaunpur, Gujafat, the Deccan ; and the Hindu kingdoms of Vijaynagar, Meywar and Orissa.

Rise of religious sects under Pathan rule ; Ramananda, Kabir, Nanak, Chaitanya. Spread of Mahomedanism. Pathan architecture. The Urdu language. Indian literature in Pathan times.

The Mogul dynasty : Babar ; Humayun ; Sher Shah ; Restoration of Humayun.

Akbar : Todar Mal : Abul-Fazl.

Jehangir ; Nur Jehan ; Sir Thomas Roe ; Shah Jehan ; Bernier ; Mogul architecture.

Aurangzeb : Rajput revolt ; his treatment of the Hindus ; Sivaji and the Mahrattas ; Break-up of the Mogul empire.

The successors of Aurangzeb ; revolt of the provinces ; invasions of the Mahrattas ; invasions of Nadir Shah and Ahmed Shah Abdali. Struggle for supreme power between Mahomedans and Mahrattas ; the Mahratta confederacy ; extent of Mahratta dominion ; contact of the Mahrattas with the English.

The Europeans in India ; discovery of the Cape route to India by the Portuguese. The Dutch, the French and the English Merchant Companies, and early settlements. First Charter of the East India Company.

The French in India, Dupleix. The English in India, Clive ; English wars and territorial acquisitions in Madras, Bengal and Bombay. Plassey ; the Dewany. Early History of Calcutta. Clive's system of administration. Warren Hastings : his financial, revenue and judicial reforms ; his relations with native powers.

The Regulating Act ; Warren Hastings, first Governor-General ; extent of British dominion in his time.

Pitt's India Act ; Lord Cornwallis : his administrative reforms ; the Permanent Settlement. Sir John Shore : his non-intervention policy.

Lord Wellesley ; his wars with Mysore and with the Mahrattas ; the system of Subsidiary Treaties.

Lord Minto ; state of Central India ; extension of relations of British Indian Government with foreign powers outside India ; renewal of the Company's Charter.

Lord Hastings ; his wars with Nepal and with the Mahrattas. Lord Amherst ; the First Burmese War.

Lord William Bentinck ; his social and administrative reforms ; renewal of the Company's Charter. Sir Charles Metcalfe.

Lord Auckland ; his policy ; the First Afghan War. Lord Ellenborough ; the Sind War. Lord Hardinge ; the First Sikh War.

Lord Dalhousie ; the Second Sikh War ; the Doctrine of Lapse and the Annexation policy ; the Second Burmese War. Material progress of the country under Dalhousie.

Lord Canning ; the Indian Mutiny, probable causes ; the assumption of direct Government by the Crown ; the Queen's Proclamation.

India under the Viceroys : Financial reforms ; the Orissa Famine and other great famines ; the Second and Third Afghan Wars ; the Third Burmese War ; delimitation of Frontier boundaries.

The Mahrattas : their rise ; Sivaji and his successors ; Mahratta system of war, administration, and revenue ; rise of the Peshwas ; Baji Rao ; his successors ; origin of the chief existing Mahratta states.

Mysore : an ancient Hindu kingdom ; Hyder Ali ; his wars with the Mahrattas ; the Nizam and the English ; Tippu Sultan ; Restoration of the Hindu dynasty.

The Sikhs : their origin and religion ; Guru Govinda ; their struggle with Ahmed Shah Abdali ; Ranjit Singh ; his conquests ; the Khalsa ; Ranjit Singh's successors.

### PROGRESS OF INDIA UNDER BRITISH RULE.

1. *Earliest declarations of principles of English rule.*—Variety of races and religions, and of conflicting interests ; these interests subordinated to one great common interest that all have as subjects and citizens of one State. No ruling caste in India. The Queen's Proclamation.

2. *Respect for indigenous ideas and institutions.*—Freedom of faith and worship for all classes. No interference with seats of Oriental learning. Their encouragement in later times. Hindu Law applicable to Hindus, and Mahomedan Law to Mahomedans in certain classes of cases. Methods of land settlement. Early Village Police. Panchayets. Early methods of judicial administration.

3. *Advanced Western ideas and institutions adapted and introduced as an agency of progress.—*

- I. *Political*.—Codes embodying the most modern English juridical ideas. Open administration of justice. Equality of all men in the eye of the law. Litigious system of criminal procedure. The right of prisoners to be defended by counsel. No conviction or sentence without a trial. Trial by jury. Varieties of Local Self-Government. Progress of the elective system.
- II. *Social*.—Social practices of a criminal character not tolerated. Abolition of *suttee*, of infanticide, of hook-swinging. Legalisation of the re-marriage of Hindu widows. Removal of disabilities of Hindus from conversion to Christianity. Female Education. Laws in regard to decency and morals.
- III. *Educational*.—Primary, secondary, and higher education. Higher Education through the medium of the English language. Religious neutrality in education. Education open to all castes, races and sects. Scientific, technical and artistic education. Research. Education in foreign countries. Universities. Libraries. Museums. Learned Societies. Preservation of ancient records. Encouragement of authors.
- IV. *Economic*.—Encouragement of industries. Free trade. Protective works against famine. Famine relief. Remission of revenue. Measures for the benefit of ryots. Agricultural Banks. Savings Banks. Protection of inventions. Industrial Exhibitions. Free scope for commercial and industrial enterprise.
- V. *Material*.—Reclamation of waste lands. Railways. Telegraphs. Irrigation Works. Mills. Factories. Dockyards. Tanks. Wells. Bridges. Landing places. Roads. Harbours. Fortifications. Sanitation. Measures for dealing with epidemics. Geological and other surveys. Forest laws. Mining operations. Preservation of ancient monuments.
- VI. *Civic*.—Freedom of the Press. Right of public meeting. Right of petitioning. Eligibility to appointments in the public service and to honorary offices. Openness of the professions.
- VII. *General*.—A high standard of general efficiency in the administration. Repression of thuggi and dacoity. Increased security of life and property. Widened spheres of popular activity. Awakening of a new national life.



## THE PRESENT ADMINISTRATION OF INDIA.

Defence :—the Indian Army, and the British Naval Squadron in Indian waters.

Agencies for the maintenance of order :—the Magistracy and the Police.

The Viceroy and Governor-General of India ; his responsibility to the Secretary of State : his Executive and Legislative Councils.

Constitution of various Provincial Governments.

Administration of Justice, Judicial Committee of the Privy Council, the Highest Court of Appeal.

The High Courts established by Charter granted by the King in Parliament. Chief Courts established by the Government of India. District Courts ; Civil and Criminal.

Chief sources of Revenue :—The Land Revenue : the Permanent, Raiyatwari and Talukdari Settlements. Salt and Opium Monopolies : Excise Duties : Import Duties : Income Tax : Direct and Indirect taxes.

Chief heads of Expenditure.

Local Self-Government ; Municipalities ; District Boards ; Local Boards ; Unions ; Panchayats.

The Native States and the general nature of their connection with the British Government by subsidiary treaties : Hyderabad, Mysore, Kashmir, Gwalior, Baroda. Smaller States under an Agent to the Governor-General : names of these Agencies. Some small States under the control of the Provincial Governors.

A text-book on the Present Administration of India and on the Progress of India under British Rule shall be prepared and prescribed by the University and be its property.

No text-books shall be prescribed on the historical portion of the Syllabus but the Board of Studies shall, from time to time, recommend suitable books to indicate the standard of knowledge required.

## GEOGRAPHY.

## (i) GENERAL.

(a) The Earth's shape ; day, night, and the seasons.

Divisions of the Earth's surface ; Latitude and Longitude.

The compass ; simple map-making.

Land-forms, and the action of climatic forces on them.

The general relief of the Globe, *i.e.*, the great slopes of the world as forming the continental water-partings, and deciding the general distribution of rainfall.

The great oceans of the world, and their relation to the great water-partings ; winds, tides, and currents.

(b) Outlines of the Political Geography of the world.

## (ii) SPECIAL.

Political and General Geography of India and Burma, including the following points :—

1. *Natural regions and surface features.*

2. *Distribution of rocks and economic minerals.*

Action of weather on rocks. Formation of soil. The work of rain and rivers. Alluvium.

3. *Climate.*

4. *Vegetation.*

Forest, pasture land, agricultural land, desert. Areas rendered cultivable by systems of irrigation. The distribution of teak, sal, and cocoanut trees ; of rice, millet, wheat ; of cotton, tea and jute.

5. *Animal Life.*

The principal animals and their distribution.

6. *Industries.*

The leading industries and their location. Circumstances favouring their growth.

7. *Population.*

Approximate number and density. Distribution of races, languages, and religions. Agricultural and non-agricultural elements of the population.

8. *Means of communication.*

The chief roads, waterways, and railways, and mountain passes.

9. *Commerce.*

The principal commodities exchanged and the countries of exchange. The chief ports, and their leading imports and exports.

## ELEMENTARY MECHANICS.

### I.—MOTION.

Varieties of motion.

Elementary notions of velocity and acceleration.

Motion of a body with constant acceleration.

Composition and resolution of motions.

Bodies falling freely under gravity.

Special cases of bodies falling under gravity (inclined plane, projection in any direction, etc.)

## II.—FORCE.

Elementary notions of mass, inertial momentum.

Force measured by rate of change of momentum.

Units of force ; poundal, dyne.

Relation between mass and weight.

Atwood's machine.

Impulsive forces—impulse.

Newton's laws of motion.

Balancing of forces.

Conditions for the equilibrium of three forces not parallel.

Triangle and parallelogram of forces.

Moments.

Conditions for the equilibrium of three parallel forces.

Composition and resolution of parallel forces in one plane.

Centre of parallel forces.

Centre of gravity. Mass-centre. Position of centre of gravity in stable and unstable equilibrium.

Methods of finding the centre of gravity of systems of particles in elementary cases.

Mass-centre of a triangle—of the perimeter of a triangle—of two bodies, whose individual mass-centres are given.

Illustrations of conditions of equilibrium in simple machines ; levers ; balance ; pulleys ; inclined plane.

The subject is to be treated mainly experimentally. No knowledge of mathematics except such as may be necessary for elucidating experiments and as may fall within the limits of the Matriculation Mathematics, compulsory and additional, shall be required.

## . ELEMENTARY HYGIENE.

I. *Definition of Hygiene—personal and public.*

II. *General structure of the human body.*—The skeleton ; muscles ; nervous, respiratory, circulatory, secretory and excretory systems. Organs of special sense.

III. *General functions of the human body.*—Locomotion ; Innervation : Physiology of Respiration, Circulation and Digestion. Secretion and Excretion.

IV. *Air.*—Its average composition. Functions of Oxygen. The air before and after respiration. Other sources of impurities. Air of crowded rooms. Evil effect of impure air. Increased incidence of Tuberculosis in India. Dust and its dangers. Air-borne diseases.

Means of purification of air, *natural and artificial* ; part played by plants. Ventilation. Minimum air-space for each person in schools and dwelling-houses.

V. *Water*.—Its composition. Natural waters.

The need for water and the quantity per individual.

Chief sources of water-supply in Bengal and how they are polluted.

Chief impurities of water and their significance. Hard and soft waters.

How to keep the sources of water (wells, tanks, etc.) free from pollution.

Means for purification of drinking water ; distillation ; filtration ; use of chemicals ; boiling.

Evil effects of impure or scanty supply of water. Water-borne diseases.

VI. *Food*.—Its five nutritive principles (Proteids, Fat, Carbohydrate, Salts and Water), their respective functions and the quantity of each required in health for people of different ages and vocations.

Composition of common foodstuffs :—

Milk ; Meat ; Fish ; Eggs ; Poultry ; Flour ; Rice ; *Dal* ; Butter, *Ghee* and Oil ; Sugar ; Potatoes ; various fresh vegetables, fruits and nuts.

Characters of good meat, fish and milk.

Common adulterants of food.

Food in relation to diseases.

Accessories of food—condiments and *chutneys*. Good drinks and harmful drinks—tea, coffee, and cocoa ; aerated waters ; alcohol.

Construction of suitable diet—Scales for different people. Eating of food and time of eating ; intemperance in eating ; insufficiency of food.

Cooking, storage and distribution of food.

Some preserved foods.

VII. *Dwelling Houses*.—Selection of site ; houses to be constructed on well-thought-out plans ; plenty of light and air ; protection against damp ; good drainage ; privies, cowsheds and stables at some distance from the main building ; sufficient open space between contiguous houses ; adequate arrangements for disposal of refuse and filth.

Huts in villages ; low lands to be avoided ; plinth well-raised ; sufficient number of openings for light and air in each room ; situation of latrines and cowsheds ; arrangements for drainage and disposal of sewage.

VIII. *Preventive medicine*.—Epidemic and endemic diseases. Malaria, Cholera, Small-pox, Plague, Influenza, Typhoid fever, Kala-azar, Dysentery, Tuberculosis, Consumption, Hook-worm and other common parasitic diseases—a brief study as to their origin and modes of spread and the measures for their prevention.

Insects in relation to spread of diseases.

Small-pox and Vaccination.

A general knowledge of antiseptics, disinfectants, and inoculations.

Disinfection of rooms, clothing, beddings, excreta and discharges.

IX. *Personal Hygiene*.—Care of teeth, hair, skin, eyes, ears, nose, and throat. Baths, Clothings—Materials and forms used should be adapted to the climate, habits and occupation of the people. Clothing of children.

*Work and Exercise*.—Out-door and in-door games.

*Fatigue, Rest and Sleep*.—Amount of sleep required for persons of different ages.

Importance of attitudes and postures. Eyesight and its preservation. Bad habits.

X. *Evil effects of the use of intoxicating Drugs*.—Tobacco, Opium, Indian hemp, Cocaine.

*Note*.—It is not intended that candidates should be examined in Chemistry, Anatomy, Physiology or like contributory subjects ; but the student should be taught, with the aid of experiments, such simple facts in these contributory subjects as may be essential, for an elementary scientific knowledge of hygiene.

Books should be recommended with a view to indicate the scope of the Syllabus.

## GENERAL.

1. In order to pass the Matriculation Examination a candidate must obtain—

(i) In English, either :—

In the first paper 40 marks, and in the aggregate of the two papers 72 marks ; or, in the aggregate of the two papers 80 marks.

(ii) In the Vernacular paper, or in the paper alternative to it, 36 marks.

(iii) In the compulsory Classical language paper, 30 marks.

(iv) In the compulsory Mathematical paper, 30 marks and in the aggregate of all the papers, 250 marks.

Provided that if less than 30 marks are obtained in any of the additional papers or subjects, such marks shall not be included in the aggregate.

2. Candidates who obtain 350 marks in the aggregate shall be placed in the First Division, and those who obtain 280 in the Second Division.

3. Any candidate who has failed in one subject only, and by not more than 5 per cent. of the full marks in that subject,

and has shown merit by gaining 350 marks, shall be allowed to pass. In order to determine the Division in which such a candidate will be placed and his place in the Division, the number of marks by which he has failed in one subject shall be deducted from his aggregate.

4. If the Moderators are of opinion that, in the case of any candidate not covered by the preceding Regulations, consideration ought to be allowed by reason of his high proficiency in a particular subject or in the aggregate, they shall report the case to the Syndicate, and the Syndicate may pass such candidate.

## CHAPTER XXXI.

### INTERMEDIATE EXAMINATION IN ARTS.

1. The Intermediate Examination in Arts shall be held annually in Calcutta and in such other places as shall, from time to time, be appointed by the Syndicate, the approximate date to be notified in the Calendar.

2. Any under-graduate of the University may be admitted to this examination, provided he has prosecuted a regular course of study in one or more Colleges affiliated for this purpose, for not less than two academical years after passing the Matriculation Examination.

Any student who has passed the Intermediate Examination in Science may take up the course for the Intermediate Examination in Arts at the second year's stage, and, after one year's regular course of study in one or more Colleges affiliated for the purpose, appear at the examination. He will be excused attendance and examination in the subject or subjects in which he has already passed at the Intermediate Examination in Science.

3. Every candidate sent up for the Intermediate Examination in Arts by an affiliated College shall produce a certificate (a) of good conduct, (b) of diligent study, (c) of having satisfactorily passed the College periodical examinations and other tests, and (d) of probability of passing the examination. Every candidate for admission shall send in his application with a certificate in the form prescribed by the Syndicate either to the Registrar or to a local officer recognised by the Syndicate. Every such application must reach the office of the Registrar at least six weeks before the date fixed for the commencement of the Examination.

4. A fee of thirty rupees shall be forwarded by each candidate with his application. A candidate who fails to pass or to

present himself for examination shall not be entitled to claim a refund of the fee. A candidate who fails to pass may be admitted to any one or more subsequent Intermediate Examinations in Arts on payment of a like fee of thirty rupees on each occasion, provided he produces a certificate from the Head of an affiliated College showing that he has prosecuted a regular course of study for one academical year since the date of the last examination, in each of the subjects in which he is to be examined.

5. The Intermediate Examination in Arts shall be conducted by means of printed papers, the same papers being used at every place at which the Examination is held.

6. As soon as possible after the Examination, the Syndicate shall publish a list of the candidates who have passed, arranged in three divisions, the first in order of merit and the second and third in alphabetical order. Every candidate shall, on passing, receive a certificate in the form entered in Appendix A.

7. The subjects for the Intermediate Examination in Arts shall be—

- (1) English ... .. *Three papers.*
- (2) One of the following vernacular languages :—Bengali, Hindi, Uriya, Assamese, Urdu, Burmese, Modern Armenian, Khasi, Nepali (Parbatia), Maithili, Modern Tibetan, Marathi, Gujrathi, Telugu, Tamil, Kanares, Malayalam, Sinhalese, Portuguese, Persian, provided that a candidate may take up the last subject if it is not taken up as a Classical Language.

The Syndicate shall have power to add to this list.

If the vernacular of a candidate is a language not included in the above list, he shall have an alternative paper of a somewhat advanced character in English.

- (3, (4) and (5). Three of the following subjects, of which two at least must be from Group A :—

#### *Group A.*

One of the following languages :—

- (i) Sanskrit, Pali, Arabic, Persian, Hebrew, Classical Armenian, Greek, Latin, French, German, Italian, Syriac.\*
- (ii) History.
- (iii) Logic.

\* Also Bengali, Assamese, Khasi, Hindi and Urdu for female candidates sanctioned by the Syndicate.

- (iv) Mathematics.
- (v) Elements of Civics.
- (vi) Commercial Geography.
- (vii) Commercial Arithmetic and Elements of Book-keeping.

*Group B.*

- (i) Physics.
- (ii) Chemistry.
- (iii) Geography.
- (iv) Physiology.
- (v) Botany.
- (vi) Zoology.
- (vii) Geology.

There shall be two papers in each of the subjects enumerated under Groups A and B.

8. Every paper in every subject shall be of three hours, and shall carry 100 marks.

8 (a). Candidates may also be examined, if they so desire, in an additional subject included under Group A, provided they have not already taken the subject. In this optional subject there shall be two papers of three hours each.

9. The Syllabus in Mathematics and in all the subjects in Group B shall be the same as that prescribed for the Intermediate Examination in Science.

10. No practical examination will be held by the University in connection with subjects in Group B in the Intermediate Examination in Arts, but every student who desires to be examined in any such subject must produce a certificate from the Principal of his College to the effect that he has completed in an affiliated College the corresponding practical course prescribed by the Regulations.

11. The following are definitions of the limits of the above subjects:—

*Paper I.*—Poetry texts.

*Paper II.*—Prose texts.

*Paper III.*—(a) Essay, (b) Prosody and Rhetoric, (c) Questions on unseen passages from books of the same standard of difficulty as those recommended for the Matriculation Examination—

- (a) shall carry 40 marks.
- (b) „ „ 20 „
- (c) „ „ 40 „

\*



### VERNACULARS.

1. The course in Vernacular shall include select texts in prose and verse to be prescribed by the Syndicate on the recommendation of the Board of Studies concerned.

The Syndicate shall also draw up, on the recommendation of the Board, a small selection of books by notable authors as showing the standard up to which students will be expected to have read.

2. The Examination shall include:

- |   |     |     |     |           |
|---|-----|-----|-----|-----------|
| (a) Questions on the subject-matter and on the language of the prescribed texts | ... | ... | ... | 40 marks. |
| (b) An Unseen Passage to be summarised or amplified in the Vernacular           | ... | ... | ... | 15 marks. |
| (c) Translation from English into Vernacular                                    | ... | ... | ... | 15 „      |
| (d) Questions on Composition  | ... | ... | ... | 10 „      |
| (e) An Essay in Vernacular—headings being given                                 | ... | ... | ... | 20 „      |

3. The unseen passage shall not exceed in difficulty the

- (a) Vernacular texts prescribed for the examination.
- (b) Questions shall not be set on the history of language or literature of the Vernacular.

4. The Alternative Paper in English (for candidates whose Vernacular is a language not included in the prescribed list) shall include:

- (a) questions on selected texts in prose and verse to be prescribed by the Syndicate on the recommendation of the Board of Studies in English; and
- (b) questions on composition, including Rhetoric and Prose.

### SANSKRIT.

1. The course in Sanskrit shall consist of selected passages in prose and verse. The texts in poetry shall include a portion of the Bhattikavya, and a portion either of the Raghuvansa or of the Kumar-Sambhava. The text in prose shall be taken from the Dasakumarcharita and the Mahabharata.

To the above list other works may, from time to time, be added by the Syndicate on the recommendation of the Board of Studies in Sanskrit.

2. The course shall also include the elements of Sanskrit Grammar, of which a fuller knowledge shall be required than at the Matriculation Examination. A text-book in Grammar shall be prepared and prescribed by the University and be its property.

3. The marks shall be distributed as follows :—

*Paper I.*

- (a) Questions on the Poetry texts. Not more than 25 marks shall be assigned to mere translation from the set texts ... 50 marks.
- (b) Questions on Grammar, including passages for correction ... 25 marks.
- (c) Passages for translation from English into Sanskrit. 25 marks.

*Paper II.*

- (a) Questions on the Prose texts. Not more than 15 marks shall be assigned to mere translation from the set texts ... 30 marks.
- (b) Unseen Sanskrit passages for translation into English. 30 marks.
- (c) Questions on Grammar ... 15 marks.
- (d) Passages for translation from English into Sanskrit. 25 marks.

Questions on the texts shall comprise—

- (a) Passages from the set texts for translation into English.
- (b) Questions on the subject-matter of the text.
- (c) Questions on the language of the text and grammatical questions relating thereto.
- (d) Passages for translation into English from such standard Sanskrit commentaries on the set texts as may be prescribed from time to time.

4. Unseen passages shall consist of simple prose not exceeding in difficulty the prose texts set for the Matriculation Examination.

No questions shall be set on Prosody or Rhetoric.

PALI.

1. The course in Pali shall consist of the whole of Andersen's Reader and such other selections as may, from time to time, be prescribed by the Board of Studies in Sanskrit Languages.

2. The course shall also include a knowledge of Pali Grammar of a higher standard than that required at the Matriculation Examination.

Grammars shall be recommended from time to time by the Board of Studies concerned.

3. The marks shall be distributed as follows :—

*Paper I.*

- (a) Questions on the Poetry texts. Not more than 25 marks shall be assigned to mere translation from the set texts ... 50 marks.
- (b) Grammatical questions ... 25 marks.
- (c) Passages for translation from English into Pali. 25 marks.

*Paper II.*

- (a) Questions on the prose texts. Not more than 25 marks shall be assigned to mere translation from the set texts ... 50 marks.
- (b) Unseen Pali passages for translation into English 30 marks.
- (c) Grammatical questions ... 20 marks.

Questions on the texts shall comprise—

- (a) Passages from the set texts for translation into English.
- (b) Questions on the subject-matter, and
- (c) Questions on the language of the text.

Unseen passages shall consist of simple prose not exceeding in difficulty the texts set for the Matriculation Examination.

ARABIC.

1. The course in Arabic shall consist of such portions as may be prescribed by the Syndicate, on the recommendation of the Board of Studies concerned of the following works :—

- (1) Ithaq-uz Zahab by Abdul Momen al Maghrebi.
- (2) Ikhwanus Safa.
- (3) Al Fakhri by Ibni-i Taqtaqi.
- (4) Muruj-uzzahab by Mas-i-udi.
- (5) Adabud Dunya wad Din by Mawardi.
- (6) Diwan by Hassan Ibn Thabit.
- (7) Majaniul Adab, Parts III and IV.
- (8) Nakhbul Mulah, Parts II and III.
- (9) Maqalat-i Ali.
- (10) Manjamut Tibr.
- (11) Qoran.
- (12) Qalyubi.
- (13) Kalila wa Dimna.
- (14) Tarikh Kamil by Ibn Ather.

The selections shall be prepared by and be the property of the University.

2. The course shall also include Arabic Grammar, of which a fuller knowledge shall be required than at the Matriculation.

A text-book in Grammar shall be prepared and prescribed by the University and be its property.

The Board of Studies concerned may make such modification in the list of books as may seem to them desirable.

The scope of the subject of each paper shall from time to time be defined by the Board concerned and the distribution of the marks may be modified in such manner as may seem desirable to the Board.

3. The marks shall be distributed as follows :—

*Paper I.*

- (a) Questions on the texts.  
Not more than 25 marks shall be assigned to mere translation ... 50 marks.
- (b) Grammar, including passages for correction and unvo-  
calised passages for vocalisation ... 30 marks.
- (c) Simple English passages for translation into Arabic.  
20 marks.

*Paper II.*

- (a) Questions on the texts ... 30 marks.  
Not more than 15 marks shall be assigned to mere translation.
- (b) Unseen passages of Arabic for translation into  
English ... 30 marks.
- (c) Questions on Grammar ... 15 marks.
- (d) Simple English passages for translation into Arabic.  
25 marks.

The passages for translation from English into Arabic shall in no case be translated portions of the prescribed text.

Questions on the texts shall comprise—

- (a) Passages from the set texts into English.
- (b) Questions on the subject-matter, and
- (c) Questions on the language of the text.

The unseen passages shall consist of simple prose not exceeding in difficulty the texts set for the Matriculation Examination.

No questions shall be set on Prosody or Rhetoric.

## PERSIAN.

1. The Persian Course shall consist of select passages in Prose and Verse from any or all of the following works :

*Prose.*

- (1) Anwar-i-Suhaili.
- (2) Akhlaq-i-Muhsine.
- (3) Tarikhi Iran by Mirza Hairal.
- (4) Tarikh-i-Sasaniyan.
- (5) Akbarnama.
- (6) Zafarnama.

*Poetry.*

- (1) Kulliyat-i-Sadi.
- (2) Kulliyat-i-Jami.
- (3) Kulliyat Nizami.
- (4) Kullyati-i-Zahir-i Faryabi.
- (5) Kulliyat-i-Attar.
- (6) Kulliyati Salman Sawji.
- (7) Khamss-i-Nizami.

The above list may, from time to time, be added to on the recommendation of the Board of Studies.

The selections shall be prescribed and prepared by the University and be its property.

2. The course shall include Persian Grammar.

The Board of Studies concerned may make such modification in the list of books as may seem to them desirable.

The scope of the subject of each paper shall from time to time be defined by the Board concerned and the distribution of the marks may be modified in such manner as may seem desirable to the Board.

3. The marks shall be distributed as follows :

*Paper I.*

- |   |        |           |
|---|--------|-----------|
| (a) Questions on Persian Poetry Texts                             | ...    | 50 marks. |
| Not more than 25 marks shall be assigned to mere translation.     |        |           |
| (b) Persian Grammar   | ...    | 25 marks. |
| (c) Passages of simple English Prose for translation into Persian | ... .. | 25 marks. |

In (b) passages shall be set for testing the practical application of grammatical rules.

*Paper II.*

- (a) Questions on Persian Prose Texts ... 40 marks  
Not more than 20 marks shall be assigned to mere translation.
- (b) Unseen passages for translation from Persian into English ... 35 marks.
- (c) Passages of simple English Prose for translation into Persian ... 25 marks.

The passage for translation from English into Persian shall in no case be translated portions of the prescribed texts.

Questions on Persian texts shall comprise—

- (a) Passages from the set text for translation into English.
- (b) Questions on the subject-matter, and
- (c) Questions on the language of the text.

The unseen Persian passage shall consist of easy prose and verse not exceeding in difficulty the text prescribed for the Matriculation Examination.

No questions shall be set on Prosody or Rhetoric.

ARMENIAN.

1. The Course in Classical Armenian shall consist of—

*Prose.*

Moses of Khoren's History of Armenia, Part II.

*Poetry.*

Elishe Vardapiet Doorian's Course of Classical Armenian, Part II.

The course shall also include Armenian Grammar, of which a fuller knowledge will be required than at the Matriculation Examination.

2. The marks shall be distributed as follows :—

*Paper I.*

- (a) Questions on the Prose Texts ... 40 marks.  
Not more than 20 marks shall be assigned to mere translation.
- (b) Questions on Grammar, including passages containing errors for correction ... 20 marks.
- (c) Passages for translation from English into Armenian.  
40 marks,

*Paper II.*

- (a) Questions on the Poetry Texts ... 40 marks.  
 Not more than 20 marks shall be assigned to mere translation.  
 (b) Unseen passages in Armenian for translation into English ... 80 marks.  
 (c) Passages for translation from English into Armenian. 80 marks.

Questions on the texts shall comprise—

- (a) Passages from the set texts for translation into English,  
 (b) Questions on the subject-matter, and  
 (c) Questions on the language of the text.

The unseen passages shall consist of simple prose not exceeding in difficulty the text prescribed for the Matriculation Examination.

HEBREW.

The course in Hebrew shall consist of prescribed selections from Genesis, Isaiah, Ruth and the Psalms.

The marks in the two papers shall be distributed in the same proportions as in the case of Armenian.

GREEK.

1. The course in Greek shall consist of suitable selections from the following prose writers and poets, to be prescribed from time to time by the Board of Studies concerned :—

Xenophon, Herodotus, Plato, Plutarch, Homer, Euripides and Sophocles.

The course shall also include Attic Greek Grammar.

2. The marks shall be distributed as follows :—

*Paper I.*

- (a) Questions on the Prose Selections ... 40 marks.  
 Not more than 20 marks shall be assigned to mere translation.  
 (b) Questions on the Poetry Selections ... 40 marks.  
 Not more than 20 marks shall be assigned to mere translation.  
 (c) Questions on Grammar ... 20 marks.

*Paper II.*

- (a) Translation of simple passages from English into Greek. 80 marks.  
 (b) Unseen passages in Greek for translation into English. 70 marks.

Question on the texts shall comprise—

- (a) Passages from the set texts for translation into English.
- (b) Questions on the subject-matter, and
- (c) Questions on the language of the text.

The unseen passages shall not exceed in difficulty the selections set for the Matriculation Examination.

## LATIN.

1. The course in Latin shall consist of suitable selections from the following prose writers and poets, to be prescribed from time to time by the Board of Studies concerned :—

Sallust, Cicero, Livy, Virgil, Horace.

The course shall also include Latin Grammar.

2. The marks shall be distributed as follows :—

### *Paper I.*

(a) Questions on the Prose Selections ... 40 marks

(b) Questions on the Poetry Selections ... 40 marks

In neither case shall mere translation of the set texts carry more than 20 marks.

(c) Questions on Grammar ... 20 marks

### *Paper II.*

(a) Translation of simple passages from English into Latin  
40 marks.

(b) Unseen passages in Latin for translation into English  
60 marks.

Questions on the texts shall comprise—

- (a) Passages from the set texts for translation into English.
- (b) Questions on the subject-matter, and
- (c) Question on the language of the text.

The unseen passages shall not exceed in difficulty the selections set for the Matriculation Examination.

## FRENCH.

1. The course in French shall consist of one work in prose and selections in verse from one or more writers, which shall be prescribed from time to time by the Board of Studies concerned. The course shall include French Grammar.

2. The marks shall be distributed as follows :—

### *Paper I.*

(a) Questions on the prescribed texts, prose and verse.  
50 marks.



Not more than 25 marks shall be assigned to mere translation.

- (b) Questions on Grammar ... 20 marks.  
 (c) Passages for translation from English into French  
 30 marks.

### *Paper II.*

- (a) Unseen passages of French prose and verse for translation into English ... 70 marks.  
 (b) Passages for translation from English into French.  
 30 marks.

Questions on the text shall comprise—

- (a) Passages from the set texts for translation into English.  
 (b) Questions on the subject-matter, and  
 (c) Questions on the language of the text.

### GERMAN.

1. The course in German shall consist of one work in prose and selections in verse from one or more writers, which shall be prescribed from time to time by the Board of Studies concerned. The course shall include German Grammar.

2. The marks in the two papers shall be distributed in the same proportion as in the case of French.

### HISTORY.

The subject shall be—

- (i) The History of England, from the earliest times to the end of the reign of Victoria.  
 (ii) The History of Ancient Greece, from the earliest times to the Roman Conquest, 146 B.C.  
 (iii) The History of Rome, from the earliest times to the extinction of the Western Empire, 476 A.D.

*Paper I.*—History of England.

*Paper II.*—History of Greece and Rome.

### LOGIC.

Definition, Scope, and Use of Logic. Its relation to Metaphysics and Psychology. Immediate and Mediate knowledge. Reasoning in general. Division of Logic into Formal and Mate-

The following Syllabus in Bengali has been prescribed by the Syndicate for the Intermediate Examination in Arts of Female Candidates :—

1. The course in Bengali shall consist of books in prose and verse.  
 2. The course shall also include the Grammar of the Bengali language of which a fuller knowledge shall be required than for the Matriculation Examination. A text-book in grammar shall be prescribed or recommended.

rial. Formal Logic. Principles of Formal Reasoning : Identity, Contradiction, Sufficient Reason. Axioms and Postulates. Language and Thought. Realism. Conceptualism and Nominalism, and their bearing on the nature of the logical processes.

Concept and Term. Abstraction. Use of names. Denotation and Connotation. Extension and intension. Distribution. Definition, with its limits and formal conditions. Logical Division and its conditions. Various Divisions of Terms, and their significance.

Judgment and the Proposition. Theory of Predication and Import of Propositions. Essence. Genus. Species. Differential Property. Accident. Quantity and Quality. Modality. Simplification of Propositions. Various Divisions of Propositions and their significance. Opposition of Proposition, and its practical applications.

Inference in general. Immediate and Mediate Inference, Deductive and Inductive Inference.

Immediate Inference, and its different forms. Conversion, Obversion, Contraposition, Inversion, Opposition, with their practical applications.

Deductive Inference. Premises and Middle Terms. Syllogism : its structure and condition. The canons. Figures and Moods, and their rules. Reductions. Hypothetical and Disjunctive Syllogism with their rules. Dilemma. Compound Syllogisms and Trains of Reasoning. Practical application of the Syllogism to express and test reasonings.

Fallacies in Deductive Reasoning.

Material Logic. Nature of truth. Knowledge and Reality. Sources of knowledge. Perception. Inference. Authority. Necessary Truth.

3. The marks shall be distributed as follows :—

*Paper I.*

- |  |               |
|--|---------------|
| (a) Questions on the poetry texts. Not more than 25 marks shall be assigned to mere translation from the set texts | ... 50 marks. |
| (b) Questions on Grammar including passages for correction   | 25 marks.     |
| (c) Easy unseen passages in modern Bengali Prose for translation into English                                      | ... 25 marks. |

*Paper II.*

- |   |               |
|---|---------------|
| (a) Questions on the prose texts. Not more than 15 marks shall be assigned to mere translation from the set texts | ... 30 marks. |
| (b) Unseen Bengali passages for explanation   | ... 30 marks. |
| (c) Bengali passages for translation into English   | ... 25 marks. |
| (d) Questions on Grammar  | ... 15 marks. |

Question on the text shall comprise—

- |   |
|---|
| (a) Passages from the texts for translation into English,                             |
| (b) Questions on the subject-matter of the text, and                                  |
| (c) Questions on the language of the text and grammatical questions relating thereto. |

4. Unseen passages shall consist of simple prose not exceeding in difficulty the prose texts set for the Matriculation Examination,  
No questions shall be set on Prosody or Rhetoric,

Generalization and the General Idea.

Science. Laws of Nature. Uniformity of Nature.

The grounds and conditions of Inductive Inference. Causality. Origin of belief in universal causation. Energy and conservation. Causes and Conditions. Plurality of Causes. Composition of Causes, and Intermixture of Effects.

Discovery and Proof. Hypotheses, their uses and conditions. Theory. Verification. Observation and Experiment and their uses. The Experimental methods and their use, with examples of their application. Fallacies of Observation.

Nature, place and use of the Inductive Method. Perfect and Imperfect, Complete and Incomplete Induction. Inference from Analogy. Inference from simple Enumeration. Inductive Probability ; Chance and its Elimination. Scientific Induction. Processes simulating Induction. Fallacies in Inductive Reasoning.

Classification, Natural and Artificial, and its conditions. Relation of Classification to Division. Definition, and its material conditions. Description. Type. Errors in Classification and Definition. Terminology and Nomenclature.

Nature, place and use of the Deductive Method. Relation of Induction and Deduction ; Nature, function and value of the Syllogism. Inductive and Deductive Sciences. The actual Method of Scientific Progress. Demonstration. The World as a system of law. Explanation, and its limits.

## ELEMENTS OF CIVICS.

Scope of Civics—Definition of Citizen—His qualifications, rights and duties—Definition of rights and duties—Hindrances to good Citizenship.

The family, village, the towns and cities, the country and the Empire in relation to Citizenship.

Liberty—Civil and Political Liberty—Liberty and Authority—The idea of a state—Constitution of a State—Distinction between State and Government—Functions of Government.

The general organization of the Government of India—The Secretary of State for India—Central and Provincial Governments—Their powers and duties—Relations between them.

Popular Government—Meaning of popular control—Representative democracy—Public opinion—Its influence on popular Government—Merits and defects of popular Government—Responsibility to be combined with freedom in popular Government.

Local Self-Government—Constitutions, powers and duties of Municipalities, District Boards—Local and Union—The need for maintaining high standard of ability and efficiency, and honesty in municipal administration.

Municipal and rural problems—Water supply, drainage, sanitation, public health—Primary and vocational education—Milk supply—Co-operative efforts.

Importance of Agriculture—Cottage industries—Machine industries.

Railways—Irrigation works, telegraphs, post and other means of communication.

Principal sources of revenue.

Famine—What it means—Its prevention and relief.

Condition of the Masses—Agricultural indebtedness.

Subject-matter of Economics—Production—Its factors—distribution—Exchange—Consumption—Principles of taxation—The economic environment of the citizen.

Fundamental Economic Concepts—Value, wealth, capital, income, utility, demand, supply.

## COMMERCIAL GEOGRAPHY.

Students of Commercial Geography will be expected to possess a knowledge of General Geography up to the Matriculation standard. The course in Commercial Geography shall be divided into two papers—one paper to be devoted to countries other than India and the other exclusively to India.

Syllabus :—

*General Economic Geography* :—The bases of Commercial Geography. Its relation to other Sciences. Trade winds and ocean currents. The Geographical distribution of Commercial products. Physical conditions affecting their production. Commodities dependent on climate. Monsoons. Agricultural products. Forests and fisheries. Mineral products. Manufactures.

*Regional Economic Geography* :—Trade routes. Means of transport and communication. Ports and harbours. Industrial town and commercial centres. Chief products of important countries—agricultural, mineral, and manufactured. Principal imports and exports.

*India* :—Detailed study of physical features—climate, Monsoons. Soils and soil erosion—Location of chief agricultural, industrial and mineral products—Movements of trade—internal and foreign—Transport and communications. Competition between waterways and land transport. Ports and harbours.

## COMMERCIAL ARITHMETIC AND ELEMENTS OF BOOK-KEEPING.

I. Principles of Arithmetic. Commercial Arithmetic.

(a) Arithmetical Operations.

(b) Integers—Fractions; Vulgar and Decimal.

(c) Contracted Methods of Multiplication, Division and Square root—Decimalisation of money—Calculation of cost.

(d) Ratio—Proportion—Proportional Parts—Percentage—Averages and Statistics.

(e) Simple Mensuration—Squares, Rectangles, Triangles, and Rectilineal figures—Circles, Segments, Sectors—Prisms, Cylinders—Pyramids. Cones—Spheres—Simple Equations and their application to Inverse Problems. Application to Inverse Problems.

(f) Indian, British and Metric Systems of Weights and Measures.

(g) Logarithms and their applications.

(h) Mixtures—Profit and Loss.

## II. Trade.

(a) Inland Trade—

- (1) Invoices and Bills.
- (2) Payment for Goods.
- (3) Percentage—Gains and Losses.
- (4) Partnerships—Bankruptcies.

(b) Import Trade—

- (1) Importing Operation.
- (2) Expenses Incurred.
- (3) Customs and Excise.

(c) Export Trade—

- (1) Methods of Exporting Goods.
- (2) Kinds of Invoices and their Preparation.
- (3) Foreign Weights and Measures.
- (4) Tables of Equivalent and Values.
- (5) Foreign Currency.

## III. Finance.

(a) Coinage Systems—

- (1) Mint Par of Exchange.
- (2) Specie Point.

(b) Banking and Exchange—

- (1) Payments through Post-Office, the Treasury and the Banks.
- (2) Bills of Exchange—Telegraphic Transfers—Promissory Notes.
- (3) Discount—True, Banker's, Commercial—Discounting and Retiring of Bills.
- (4) Function of a bill of Exchange.

- (5) Foreign Exchanges—Course of Exchange.
- (6) Current Accounts.
- (c) Stock Exchange—
  - (1) Stock Exchange Transactions—Stocks and Shares.
  - (2) Contango and Backwardation.
  - (3) Speculation.
  - (4) London Stock Exchange—Calcutta Stock Exchange.
- (d) Annuities—
  - (1) Interest, Simple and Compound.
  - (2) Discount, Present Worth and Amount.
  - (3) Commission and Brokerage.
  - (4) Kinds of Annuities.
  - (5) Amount and Present Value of an Annuity.
  - (6) Leases and Sinking Funds.
  - (7) Life Annuities.

*Elements of Book-keeping.*

1. Book-keeping—Its Principles.
  - (a) Double Entry—Its theory, scientific methods, adaptability to all classes of commercial transactions.
  - (b) Single Entry—Its Meaning, principles and defects.
2. Books of Accounts—
  - (a) Journal.
  - (b) Ledger.
  - (c) Cash Book (with or without Bank and Discount columns).
  - (d) Bought, Sold and Bill Books.
3. Methods of Book-keeping—
  - (a) Journalising.
  - (b) Posting.
4. Preparation of Accounts and Balance Sheet—
  - (a) Trial Balance.
  - (b) Journalising adjustment—Depreciation, Bad Debts, Outstanding Incomes and Expenses Expenses in Advance, Writing off, Fictitious Assets, and creating Reserve Accounts.
  - (c) Journalising Closing Entries.
  - (d) Closing the Ledger.
  - (e) Preparation of Manufacturing Account, Trading Account, Profit and Loss Account, Profit and Loss Appropriation Account.
  - (f) Preparation of the Balance Sheet.
5. Distinction between Receipts and Payments, Account and Revenue Accounts, items of Receipts and Payments and

items of Income and Expenditure on the one hand, and of Assets and Liabilities on the other.

6. Treatment of Transactions connected with—

- (a) Bills of Exchange and Promissory Notes.
- (b) Goodwill.
- (c) Consignments, Outwards and Inwards.

7. Partnerships Accounts (with the exception of dissolution or winding up of a partnership Business)—Proprietors' Current Account.

8. Company Accounts (without the use of the Private Ledger)—

- (a) Formation of Joint-Stock Companies—Difference between a firm and a Joint-Stock Company—Difference between a Joint-Stock Company with Limited Liability and one with Unlimited Liability—Difference between a Public Limited Company and a Private Limited Company—Memorandum and Articles of Association, and Prospectus.
- (b) Statistical Books which a Joint-Stock Company must keep in order to comply with the requirements of the Indian Companies Act.
- (c) Entries, relating to Shares—
  - (1) Application, Allotment and Calls.
  - (2) Forfeited Shares.
  - (3) Transfer of Shares.
- (d) Preparation of Accounts and Balance Sheet, with easy adjustments.

9. Explanation of the following Commercial Terms—

Account, Debtor, Creditor, Debit, Credit, Balance, Gross and Net Profit, Interest, Discount, Asset, Liability, Capital, Trial Balance, Balance Sheet, Solvent, Insolvent, Composition, Bad Debts, Posting Folio, Petty Cash, Cheque, Bill of Exchange, Accepting, Honouring, Dishonouring, Discounting, Noting, Retiring, Invoice Receipt Voucher, Debit Voucher, Debit Note, Credit Note, Rebate, Commission, Account Sales, Depreciation, Premium, Provision, Charges, Brokerage, Bill of Sale, Personal Account, Impersonal Account, Real Account, Nominal Account

### GENERAL.

1. In order to pass the Intermediate Examination in Arts, a candidate must obtain—

In English	...	...	108 marks.
In the Vernacular or the alternative paper	...	...	86 marks.
In each of the remaining subjects taken up	...	...	60 marks.
And in the aggregate	...	...	840 marks.

2. In order to be placed in the first division a candidate must obtain 500 marks.

In order to be placed in the second division, 400 marks.

The names of candidates placed in the first division shall be published in order of merit.

If a candidate has passed in the compulsory subject and in the aggregate, the marks in excess of 60 obtained by him in the optional subject, if any, shall be added to his aggregate and the aggregate so obtained shall determine his division and his place in the list.

3. Any candidate who has failed in one subject only, and by not more than 5 per cent. of the full marks in that subject, and has shown merit by gaining 500 in the aggregate, shall be allowed to pass. In order to determine the division in which such a candidate will be placed and his place in the division, the number of marks by which he has failed in one subject shall be deducted from his aggregate.

4. If the Moderators are of opinion that, in the case of any candidate not covered by the preceding Regulations, consideration ought to be allowed by reason of his high proficiency in a particular subject, or in the aggregate, they shall report the case to the Syndicate, and the Syndicate may pass such candidate.

5. Candidates who, after passing the Intermediate Examination in Science, appear for the Intermediate in Arts, shall be required, in order to pass, to obtain 36 per cent. in each subject for which they present themselves in the latter examination.

## CHAPTER XXXII.

### BACHELOR OF ARTS.

1. An examination for the Degree of Bachelor of Arts shall be held annually in Calcutta, and at such other places as shall from time to time be appointed by the Syndicate, and shall commence at such time as the Syndicate shall determine, the approximate date to be notified in the Calendar.

2. Any under-graduate of the University may be admitted to the Examination provided he has prosecuted a regular course of study for not less than two academical years after passing the Intermediate Examination in Arts or Science in a College or Colleges affiliated to the University in the subjects which the candidate takes up.

3. Every candidate sent up for the B.A. Examination by an affiliated College shall produce a certificate (a) of good conduct,



(b) of diligent study, (c) of having satisfactorily passed the College periodical examinations and other tests, and (d) of probability of passing the Examination. Every candidate shall send to the Registrar his application, with a certificate in the form prescribed by the Syndicate at least six weeks before the date fixed for the commencement of the Examination. If he desires to be examined for Honours in any subject, he shall name the subject in his application. If a candidate offers himself for Examination in Hebrew, Armenian, French or German, he shall be required to give the Registrar notice of the fact twelve months before the date of the Examination.

4. A fee of Rs. 45 shall be forwarded by each candidate with his application, provided that a candidate who applies for admission to the Honours Examination shall pay an additional fee of Rs. 10.

A Candidate who fails to pass, or to present himself for Examination shall not be entitled to claim a refund of the fee. A candidate who fails to pass may be admitted to one or more subsequent Examinations for the Degree of Bachelor of Arts on payment of a like fee of Rs. 45 or Rs. 55 as the case may be on each occasion, provided he produces a certificate from the Head of an affiliated College, showing that he has prosecuted a regular course of study for one academical year since the date of the last Examination, in each of the subjects in which he is to be examined.

5. The Examination for the Degree of Bachelor of Arts shall be conducted by means of printed papers, the same papers being used at every place at which the Examination is held.

6. Every candidate shall be examined in the following subjects:—

(1) English.

(2) One of the following Vernaculars:—Bengali, Hindi, Uriya, Assamese, Burmese, Urdu, Modern Armenian, Nepali (Parbatia), Maithili, Modern Tibetan, Khasi, Marathi, Gujrathi, Telugu, Tamil, Kanarese, Malayalam, Sinhalese, Portuguese.

The Syndicate shall have power to add to this list.

For candidates whose vernacular is English or an Indian vernacular not included in this list, there shall be an advanced paper in English which shall be treated as separate from the Examination in English.

(3) and (4) Two of the following subjects, one of which at least must belong to Group A:

#### A.

(I) One of the following languages:—Sanskrit, Pali (including a knowledge of Sanskrit up to the Matriculation standard), Arabic, Persian, including a knowledge of

Arabic up to Intermediate standard (for Honours Course only); Hebrew, Classical Armenian, Greek, Latin, French, German, Syriac, Bengali and Urdu.

- (II) History.
- (III) Political Economy and Political Philosophy.
- (IV) Mental and Moral Philosophy.
- (V) Mathematics.
- (VI) Linguistics.

### B.

- (I) Physics.
- (II) Chemistry.
- (III) Physiology.
- (IV) Botany.
- (V) Zoology.
- (VI) Anthropology.

No candidate shall be allowed to take up Mental and Moral Philosophy unless he has taken up Logic in the Intermediate Examination in Arts. No candidate shall be allowed to take up any subject in Group B or Mathematics, who has not taken up the corresponding subject in the Intermediate Examination.

7. A candidate may take the Pass Course in four subjects or he may take the Pass Course in three subjects and the Honours Course in one subject only; but there shall be no Honours Course in the Vernacular.

8. There shall be three papers in the Pass Course and six papers in the Honours Course, in every subject except the Vernacular. In that subject only one Pass paper shall be set. Each paper shall be of three hours and shall carry 100 marks.

9. In the Syllabuses hereinafter defined Papers I, II and III shall be on the Pass Course, but questions set for Honours candidates need not be identical with those set for Pass candidates. Papers IV, V and VI shall be for Honours candidates only.

10. As soon as possible after the Examination, the Syndicate shall publish a list of the candidates who have passed in the Pass Course, arranged in alphabetical order, together with a list of those who have obtained Honours in each branch, arranged in two classes, both in order of merit. Each successful candidate shall receive with his Degree of B.A. a certificate in the form entered in Appendix A.

11. The syllabuses in Mathematics and in the subjects under Group B shall be identical in the B.A. and B.Sc. Examinations and will be found under the B.Sc. Regulations.

There shall be a practical Examination in all subjects included in Group B.

12. The following syllabuses define the subjects prescribed for the B.A. Examination. Books shall be recommended, where necessary, by the Board of Studies concerned.

### ENGLISH.

1. In Papers I, II, IV and V not more than half the marks shall be given for explanation of passages set from the prescribed texts.

2. In these papers, questions may be asked to test the candidate's appreciation of the books he has studied in the course, but questions encouraging the mere reproduction of literary criticisms shall not be set.

3. The subjects and marks shall be respectively divided as follows:—

#### *Paper I.*

Poetry and Drama texts	...	...	100 marks.
------------------------	-----	-----	------------

#### *Paper II.*

Prose texts	...	...	100	„
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In regard to the subject of these two papers students shall be expected to possess a general knowledge of the life and literary career of the authors whose works are prescribed

#### *Paper III.*

(a) Essay	...	...	50 marks.	
(b) Unseen passages from authors or works of the same standard of difficulty as those prescribed for the Intermediate Examination	...	...	50	„

4. Additional Honours Papers.

#### *Paper IV.*

(a) Additional Poetry and Drama texts	...	75	„
(b) Additional unseen passages in Poetry and Drama	...	25	„

#### *Paper V.*

(a) Additional Prose texts	...	75	„
(b) Additional unseen passages in Prose	...	25	„

In Papers IV and V the unseen passages shall not be of a higher standard of difficulty than the prescribed texts.

**Paper VI.**

- (a) Philology of the English Language ... 50 marks.  
 (b) General History of English Literature ... 50 „  
 5. No texts or unseen passages shall be taken from Spenser or from authors earlier than the Elizabethan period.

**VERNACULARS.**

1. The course in Vernacular shall include select texts in prose and verse to be prescribed by the Syndicate on the recommendation of the Board of Studies concerned

The Syndicate shall also draw up, on the recommendation of the Board, a small selection of books by notable authors as showing the standard up to which students will be expected to have read.

2. The examination shall include:—

- (a) Questions on the subject matter and on the language of the prescribed texts ... 40 marks.  
 (b) An unseen passage to be summarised or amplified in the Vernacular ... 15 „  
 (c) Translation from English into Vernacular ... 15 „  
 (d) Questions on Composition ... 10 „  
 (e) An Essay in Vernacular—headings being given ... 20 „

3. The unseen passage shall not exceed in difficulty the

- (a) Vernacular texts prescribed for the examination.  
 (b) Questions shall not be set on the history of language or literature of the Vernacular.

4. The Alternative Paper in English (for candidates whose Vernacular is a language not included in the prescribed list) shall include :

- (a) Questions on selected texts in prose and verse to be prescribed by the Syndicate on the recommendation of the Board of Studies in English; and  
 (b) Questions on composition including Rhetoric and Prose.

5. A candidate who takes Bengali or Urdu as a subject, under Group A (I) in sub-sections 3 and 4, section 6, will be examined in an additional paper in vernacular, in lieu of the compulsory paper, as outlined in sub-section 2. The marks in that paper shall be distributed as follows :—

History of Literature	...	...	45 marks.
History of Language	...	...	25 „
Essay	...	...	30 „

### ALTERNATIVE PAPER IN ENGLISH.

The special paper shall be a test in English Composition and on a general knowledge of the subject-matter of a small number of standard works in English (not exceeding three) to be prescribed by the Syndicate from time to time on the recommendation of the Board of Studies in English.

### SANSKRIT.

The Pass Course in Sanskrit shall comprise the following:—

#### *Paper I.*

(a) Poetry texts, namely, selected portions of Manu and selected portions of one of the following:—

Kiratarjuniya

Sisupalabadha ... .. 75 marks.

(b) Translation from English into Sanskrit ... 25 „

#### *Paper II.*

(a) Drama texts, namely, two of the following:—

Sakuntala

Uttararamacharita.

Mudrarakshasa.

Ratnavali ... .. 75 marks.

(b) Translation from English into Sanskrit ... 25 „

#### *Paper III.*

(a) Prose passages from unprepared Sanskrit books for translation into English ... 30 „

(b) Questions on Sanskrit Grammar, including passages for correction ... 40 „

(c) Outlines of the History of Sanskrit Literature ... 80 „

The Honours Course in Sanskrit shall comprise, in addition to the Pass Course; the following:—

#### *Paper IV.*

(a) Selected portions of Bhattikavya and Kadambari ... 75 marks.

(b) Translation from English into Sanskrit ... 25 „

#### *Paper V.*

Selected Hymns from the Rigveda, with Sayana's Commentary thereon ... 100 „

*Paper VI.*

Grammar and Rhetoric, namely—

(a) Siddhanta Kaumudi—Karaka and Samasa	60 marks.
(b) Dandi—Kavyadarsa. Sahitya Darpan,	
Chapter VI ... ..	40 ..

In the first, second, fourth, and fifth papers, the questions on the text shall include—

- (i) Passages from the prescribed texts for translation into English (to carry not more than 25 marks in any paper).
- (ii) Questions on the subject-matter and on the language of the prescribed texts.
- (iii) Questions on Grammar and Prosody (but not Rhetoric), arising out of the prescribed texts.
- (iv) Passages for translation or discussion in English, taken from standard Sanskrit commentaries on the prescribed texts, to be named by the Syndicate from time to time.

In the third paper the unseen passages shall not exceed in difficulty the prose texts set for the Intermediate Examination in Arts.

The Syndicate shall from time to time cause to be prepared and prescribed a text-book in Sanskrit Grammar.

In the sixth paper, questions will be set to test the ability of candidates to apply (a) the Rules of Panini on Karaka and Samasa, and (b) the rules of Rhetoric to passages taken from the prescribed texts.

The Syndicate shall, upon the recommendation of the Board of Studies, select the texts in accordance with the syllabus and may also recommend books or specify editions to indicate more fully the extent and standard of knowledge required in any paper.

## BENGALI.

The Pass Course in Bengali shall comprise the following:—

*Paper I.*

Drama Texts	...	...	75 marks.
Rhetoric and Grammar	...	...	25 ..

*Paper II.*

Old Poetry Texts	...	...	50 marks.
Modern Poetry Texts	...	...	50 ..

*Paper III.*

Prose Texts (Old and Modern) ...	...	80 marks.
Translation from English into Bengali ...	..	20 ..

## URDU.

The Pass Course in Urdu shall comprise the following:—

*Paper I.*

Drama Texts ...	...	75 marks.
Rhetoric and Grammar ...	...	25 ..

*Paper II.*

Old Poetry Texts ...	...	50 marks
Modern Poetry Texts ...	...	50 ..

*Paper III.*

Prose Texts (Old and Modern) ...	...	80 marks.
Translation from English into Urdu ...	...	20 ..

## ARABIC.

1. The Pass Course in Arabic shall comprise the whole or selected portions of the following works:—

Any or all of the following works:—

## PASS COURSE.

- (1) Majmaul Bahrain by Yazeji.
- (2) Fakhatul Khulafa by Ibn Arab Shah.
- (3) Akhbarul Tiwal by Dinawari.
- (4) Almustatraf by Abshahi.
- (5) Tarikhul Yemini.
- (6) Diwan by Ibu-un-Nabih.
- (7) Diwan by Abi Firas.
- (8) Jawahirul Balaghat by Hashemi.
- (9) Majmu'ul Adab by Yaziji.
- (10) Majaniul Adab, Parts V and VI.
- (11) Nakhubul Mulah, Parts IV and V.
- (12) Hamasa.
- (13) Diwans of Mutanabi.
- (14) Abul Atahiya.
- (15) Quoran with Jalalayn.

- (16) Hariri.
- (17) Tarikh Tabari.
- (18) Qazini's Geography

The course shall include Arabic Grammar, according to the modern method.

2. The Honours Course shall include, in addition to the above, the whole or selected portions of the following works :—

#### HONOURS COURSE.

- (1) Jafsir by Abu Sawud Imadi.
- (2) Al Jamius Saghir by Sayuti.
- (3) Al Iqdul Farid by Ibn Abd Rabbihi.
- (4) Muqaddiman by Ibn Khaldun.
- (5) Qualaidul Iqyan by Ibn Khaqan.
- (6) Asbabut Tarab by Shaikha.
- (7) Mukh Tasar-ul Maaui by Taftazani.
- (8) Al Mufadh-dhaliyyat by Dhabbi.
- (9) Diwan by Imraul Qais.
- (10) Diwan by Khansa.
- (11) Sub Muallaqat.
- (12) Banat Suad.
- (13) Ibu-i-Farid.
- (14) Qoran with Baydhawi and Zamakhshari.
- (15) Serat Ibu Hisham.

The Honours Course shall also include the elements of Arabic Prosody and Rhetoric; the outlines of Mahomedan History down to the fall of the Abbasid Caliphate; and a general knowledge of the History of Arabic Literature.

The Board of Studies concerned may make such modification in the list of books as may seem to them desirable.

The scope of the subject of each paper shall from time to time be defined by the Board concerned and the distribution of the marks may be modified in such manner as may seem desirable to the Board.

3. The subjects and the marks shall be distributed as follows :—

#### *Paper I.*

Questions on the Poetry texts	...	...	100 marks.
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#### *Paper II.*

Questions on the Prose texts	...	...	100	„
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#### *Paper III.*

(a) Unseen passages for translation into English	...	...	...	70	„
--	-----	-----	-----	----	---



- (b) Short English sentences for translation into Arabic ... 80 marks.

The unseen passages in this paper shall be of no greater difficulty than the texts prescribed for the Intermediate Examination.

*Paper IV.*

- (a) Questions on the additional Poetry texts ... 80 marks.  
(b) Translation from English into Arabic ... 20 „

*Paper V.*

- (a) Questions on the additional Prose texts ... 80 „  
(b) Translation from English into Arabic ... 20 „

*Paper VI.*

- (a) Questions on Mahomedan History ... 30 „  
(b) Questions on the History of Arabic Literature ... 40 „  
(c) Questions on Rhetoric and Prosody ... 30 „

In Papers I, II, IV and V, questions on the texts shall comprise—

- (a) Passages of the set texts for translation into English.  
(b) Questions on the subject-matter, and  
(c) Questions on the Grammar of set passages.

In no paper shall more than one-fourth of the marks of these questions be assigned to mere translation of the set passages.

## PERSIAN.

1. The Pass Course in Persian shall comprise the whole or selected portions of the following works:—

Any, or all of the following works :—

### PASS COURSE.

#### *Prose.*

- (1) The Siyasat Nama of Nizam-ul Mulk.
- (2) The Shamsa wa Qahqaha.
- (3) The Tarik-i-Zahangusha-i Nadir.
- (4) The Waqaya-i Nimat Khan-i' Ali.
- (5) The Masalikul Muheinin.
- (6) The Aruz-i Saifi.

*Poetry.*

- (1) The *Shahnama* of Firdausi.
- (2) The *Diman-i* of Hafiz.
- (3) The *Masnawi* of Jalal-uddin Rumi.
- (4) The *Kulliyat* of Qaani.
- (5) The *Diman-i wisal-i* Shirazi.
- (6) The *Naldaman* of Faizi.

The Pass Course shall include the elements of Persian Prosody and Rhetoric.

2. The Honours Course shall include, in addition to the above, the whole or selected portions of the following works :—

## HONOURS COURSE.

*Prose.*

- (1) *Insha-i* Abulfaze.
- (2) *Miraj-us Saadat*.
- (3) *Chahar Maqala* of Aruz-i Nizami.
- (4) *Insha-i* Taher-i Wahid.

*Poetry.*

- (1) *Gulshan-i Raj*.
- (2) *Diman-i Sail*.
- (3) *Makhzau-ul Asrar*.

The Honours Course shall also include the outlines of Mahomedan History in so far as it relates to Persia, Central Asia and India and the History of Persian Literature.

The Board of Studies concerned may make such modification in the list of books as may seem to them desirable.

The scope of the subject of each paper shall from time to time be defined by the Board concerned and the distribution of the marks may be modified in such manner as may seem desirable to the Board.

3. The subjects and the marks shall be distributed as follows :—

## PASS COURSE.

*Paper I.*

Questions on Persian Poetry texts ... 100 marks.

*Paper II.*

Questions on Persian Prose texts and on the elements of Persian Prosody and Rhetoric ... 100 marks.

*Paper III.*

- (a) Unseen passages for translation from Persian into English ... 50 marks.  
 (b) Simple English passages for translation into Persian ... 50 marks.

The unseen passages in this paper shall be of no greater difficulty than the texts prescribed for the Intermediate Examination.

In Papers I and II questions on the texts shall comprise—

- (a) Passages of the set texts for translation into English,  
 (b) Questions on the subject-matter, and  
 (c) Questions on the Grammar of the set passages.

In no Paper shall more than one-fourth of the marks of these questions be assigned to the mere translation of set passages.

## HONOURS COURSE.

*Paper I.*

- Questions on the Persian Poetry texts ... 100 marks.

*Paper II.*

- Questions on the Persian Prose texts ... 100 marks.

*Paper III.*

- (a) Unseen passages for translation from Persian into English ... 50 marks.  
 (b) Simple English passages for translation into Persian ... 50 marks.

*Paper IV.*

- (a) Questions on the additional Persian Poetry texts ... 80 marks.  
 (b) Translation from English into Persian ... 20 marks.

*Paper V.*

- (a) Questions on the additional Persian Prose texts ... 40 marks.  
 (b) Questions on Arabic Prose texts ... 30 marks.  
 (c) Translation of simple English sentences into Arabic ... 30 marks.

Candidates are permitted to write an essay in Classical Persian which shall carry 60 marks, in lieu of (b) questions on

Arabic Prose texts and (c) translation of simple English sentences into Arabic.

*Paper VI.*

- |  |               |
|--|---------------|
| (a) Questions on Mahomedan History                 | 80 marks.     |
| (b) Questions on the History of Persian Literature | 40 marks.     |
| (c) Questions on Rhetoric and Prosody              | ... 30 marks. |

In Papers I, II, IV, and V, questions on the texts shall comprise—

- (a) Passages of the set texts for translation into English.
- (b) Questions on the subject-matter, and
- (c) Questions on the Grammar of the set passages.

In no papers shall more than one-fourth of the marks of these questions be assigned to the mere translation of set passages.

PALI.

1. The Pass Course in Pali shall comprise the following works :—

*Poetry—*

Dhammapada.  
Khuddaka Patha.

*Prose.—Milindapañha.*

The course shall include a knowledge of Sanskrit Grammar \* up to the Matriculation standard, besides a knowledge of Pali Grammar and the elements of Comparative Philology.

2. The Honours Course shall comprise in addition to the above :—Mahavamsa and Dīghanikāya.

The Honours Course shall include a knowledge of Sanskrit Grammar up to the Intermediate standard, and of the History of Buddhism with special reference to India.

The subjects and the marks shall be distributed as follows :—

*Paper I.*

- |   |               |
|---|---------------|
| (a) Questions on the Poetry texts                               | ... 70 marks. |
| (b) Unseen passages of Pali poetry for translation into English | ... 80 marks. |

\* In the case of Burman students, a knowledge of Sanskrit Grammar will not be demanded for the Pass Course in Pali.

*Paper II.*

- |  |     |     |           |
|--|-----|-----|-----------|
| (a) Questions on the Prose texts                               | ... | ... | 70 marks. |
| (b) Unseen passages of Pali prose for translation into English | ... | ... | 80 marks. |

*Paper III.*

- |   |     |           |
|---|-----|-----------|
| (a) Questions on Sanskrit Grammar *                   | ... | 15 marks. |
| (b) Questions on Pali Grammar                         | ... | 15 marks. |
| (c) Questions on Comparative Philology                | ... | 40 marks. |
| (d) Simple English passages for translation into Pali |     | 30 marks. |

*Paper IV.*

- |   |     |           |
|---|-----|-----------|
| (a) Questions on the additional Poetry texts                    | ... | 40 marks. |
| (b) Unseen passages of Pali poetry for translation into English | ... | 30 marks. |
| (c) Questions on Sanskrit Grammar                               | ... | 30 marks. |

*Paper V.*

- |  |     |           |
|--|-----|-----------|
| (a) Questions on the additional Prose texts                    | ... | 40 marks. |
| (b) Unseen passages of Pali prose for translation into English | ... | 30 marks. |
| (c) Questions on Sanskrit Grammar                              | ... | 30 marks. |

*Paper VI.*

- |  |     |           |
|--|-----|-----------|
| (a) Questions on the History of Buddhism | ... | 50 marks. |
| (b) Questions on Comparative Philology   | ... | 50 marks. |

In Papers I, II, IV and V, questions on the text shall comprise—

- |   |
|---|
| (a) Passages of the set texts for translation into English, |
| (b) Questions on the subject-matter, and                    |
| (c) Questions on the Grammar of the set passages.           |

In no paper shall more than one-fourth of the marks of these questions be assigned to the mere translation of set passages.

## HEBREW.

1. The Pass Course in Hebrew shall comprise specified portions of the Historical books, the Psalms and Proverbs. The Course shall include Jewish History.

\* Alternative questions on Pali Grammar instead of questions on Sanskrit Grammar, will be set in Paper III for Burman students.

2. The Honours Course shall include in addition to the above, two Prophetical books, and the History of the Hebrew Language and Literature.

3. The marks shall be distributed as follows:—

*Paper I.*

- |  |               |
|--|---------------|
| (a) Questions on the specified Historical texts                        | 70 marks.     |
| (b) Unseen passages from Historical books for translation into English | ... 30 marks. |

*Paper II.*

- |  |               |
|--|---------------|
| (a) Questions on the Psalms and Proverbs                             | ... 70 marks. |
| (b) Unseen passages from poetical books for translation into English | ... 30 marks. |

*Paper III.*

- |  |               |
|--|---------------|
| (a) English passages for translation into Hebrew                                   | 50 marks.     |
| (b) Questions on the History of the Jews, and on the literary history of the Bible | ... 50 marks. |

*Paper IV.*

- |  |           |
|--|-----------|
| (a) Questions on the specified Prophetical books | 70 marks. |
| (b) English passages for translation into Hebrew | 30 marks. |

*Paper V.*

- |   |               |
|---|---------------|
| (a) Unseen passages from the Historical books for translation into English  | ... 40 marks. |
| (b) Unseen passages from the Prophetical books for translation into English | ... 30 marks. |
| (c) English passages for translation into Hebrew                            | 30 marks.     |

*Paper VI.*

- |   |               |
|---|---------------|
| (a) Questions on the Hebrew Language and Literature | 50 marks.     |
| (b) Questions on Jewish History                     | ... 50 marks. |

In papers I, II, and IV, questions on the texts shall comprise—

- |   |
|---|
| (a) Passages of the set texts for translation into English, |
|---|

- (b) Questions on the subject-matter, and
- (c) Questions on the Grammar of the set passages.

In no paper shall more than one-fourth of the marks of these questions be assigned to the mere translation of set passages.

### ARMENIAN.

1. The Pass Course in Armenian shall consist of the following texts:—

#### *Poetry.*

Bagratounie's translation of "Paradise Lost," Books IX, X, XI and XII.

#### *Prose.*

Agathangalo's History, Parts I and III, Moses of Khoren's History.

The course shall include the History of Armenia.

2. The Honours Course shall include in addition to the above—

#### *Poetry.*

Bagratounie's Haik Dientsazn, Books I, II, III, IV and V.

#### *Prose.*

John Catholicus.

Elishe.

The Course shall include the History of Armenian Literature and the elements of Armenian Philology.

The marks shall be distributed as follows:—

#### *Paper I.*

- |   |        |           |
|---|--------|-----------|
| (a) Questions on the Poetry texts                                   | ...    | 70 marks. |
| (b) Unseen passages of Armenian Poetry for translation into English | ... .. | 80 marks. |

#### *Paper II.*

- |  |        |           |
|--|--------|-----------|
| (a) Questions on the prose texts                                   | ...    | 70 marks. |
| (b) Unseen passages of Armenian Prose for translation into English | ... .. | 80 marks. |

#### *Paper III.*

- |  |        |           |
|--|--------|-----------|
| (a) English passages for translation into Classical Armenian | ... .. | 50 marks. |
| (b) Questions on Armenian Grammar                            | ...    | 20 marks. |
| (c) Questions on the History of Armenia                      | ...    | 80 marks. |

*Paper IV.*

- (a) Questions on the additional Poetry texts ... 70 marks.  
 (b) English passages for translation into Armenian  
 ... 30 marks.

*Paper V.*

- (a) Questions on the additional Prose texts 70 marks.  
 (b) English passages for translation into Armenian  
 30 marks.

*Paper VI.*

- (a) Unseen passages in Armenian for translation into  
 English ... 40 marks.  
 (b) Questions on the History of Armenian Literature  
 30 marks.  
 (c) Questions on Armenian Philology ... 30 marks.

In papers I, II, IV and V, questions on the texts shall comprise—

- (a) Passages of the set texts for translation into English.  
 (b) Questions on the subject-matter, and  
 (c) Questions on the Grammar of the set passages.

In no paper shall more than one-fourth of the marks of these questions be assigned to the mere translation of set passages.

## GREEK.

1. The Pass Course in Greek shall consist of suitable selections from the following authors to be prescribed from time to time by the Board of Studies concerned:—

Plato, Herodotus, Homer, Euripides, Aristophanes, Sophocles, Demosthenes.

The course shall include Greek Syntax and Grammar, and Greek History as prescribed for the Intermediate in Arts.

2. The Honours Course shall include in addition to the Pass Course selections from the following authors, to be prescribed from time to time by the Board of Studies concerned:—

Thucydides, Æschylus,

and may also include further selections from the authors mentioned in Regulation 1.

The course shall include the Philology of the Greek Language as well as the History of Classical Greek Literature.



3. The subjects and marks shall be distributed in the same way as in the case of Armenian.

### LATIN.

1. The Pass Course in Latin shall consist of suitable selections from the following authors to be prescribed from time to time by the Board of Studies concerned:—

Cicero, Livy, Lucan, Virgil, Horace.

The course shall include Latin Syntax and Grammar and Roman History as prescribed for the Intermediate in Arts.

2. The Honours Course shall include, in addition to the Pass Course, selections from the following authors to be prescribed from time to time by the Board of Studies:—

Pliny, Tacitus, Terence, Lucretius, Catullus,  
and may also include further selections from the authors mentioned in Regulation 1.

The course shall include the Philology of the Latin Language as well as the History of Latin Literature to the end of the Augustan Period.

3. The subjects and marks shall be distributed in the different papers in the same way as in the case of Armenian.

### FRENCH AND GERMAN.

1. The course in French or German for the Pass as well as for the Honours shall consist of such works in prose and verse as may be prescribed from time to time by the Board of Studies concerned.

2. The Pass Course shall include in addition to the prescribed texts, Grammar and the Outlines of French or German History.

3. The Honours Course shall include in addition to the subjects mentioned in Regulations 1 and 2 above, the elements of French or German Philology and the history of a selected period of French or German Literature.

4. The subjects and marks shall be distributed in the same way as in the case of Armenian.

### LINGUISTICS.

This subject can be taken up only by candidates who take up one of the Languages specified in A (I).

The Pass Course in Linguistics shall include the General Principles of Linguistic Science, Growth and Development of

Languages, Phonetics, the Language-Families of the World, and the Languages of India.

The Honours Course in Linguistics shall include the topics prescribed for the Pass Course, to be studied in greater detail. In addition, it will include the Comparative and Historical Grammar of English, or of the language chosen from A(I) illustrated by selected texts. It shall further include a cognate language to be chosen out of an allied group according to a scheme to be recommended from time to time by the Board of Higher Studies in Comparative Philology. Easy texts in the cognate language shall be prescribed.

### HISTORY.

1. The Pass Course in History shall be as follows:—

*Paper I.*—History of Europe from the Fall of Constantinople to the Treaty of Berlin.

*Paper II.*—History of England—a special period.

*Paper III.*—History of India from the earliest times to the close of the 19th century: and the elements of Ancient Hindu and of Mahomedan civilisation in India.

2. The Honours Course shall comprise in addition to the above—

*Paper IV.*—A special period of Greek History.

*Paper V.*—A special period of Roman History.

*Paper VI.*—The History of the Middle Ages in Europe from the rise of the Mediæval European powers down to the end of the 15th century.

In each of the special Honours papers at least one question shall be set, to be answered in the form of an essay which shall carry not less than 25 marks.

Candidates shall be expected to possess a knowledge of the Geography of the countries whose history they study, and to understand the use of physical and historical maps.

Books on History shall be recommended from time to time by the Board of Studies concerned who shall also select the special periods.

### POLITICAL ECONOMY AND POLITICAL PHILOSOPHY.

1. The Pass Course in Political Economy and Political Philosophy shall be as follows:—

*Paper I.*—Political Economy.

*Paper II.*—Political Philosophy.

*Paper III.*—Application of the principles of Political Economy to Indian topics.

2. The Honours Course, in addition to the above, shall be as follows:—

*Paper IV.*—Political Economy (a higher course).

*Paper V.*—Political Philosophy (a higher course), including a specially selected text or texts.

*Paper VI.*—Essay.

8. The following are the Syllabuses for the different subjects:—

### POLITICAL ECONOMY.

**Definition.** Scope. Relation to Sociology. Politics. Statistics. Methods. Standpoints and Schools. Postulates. Wealth. Utility. Income.

A knowledge in outline of the fundamental propositions under each head of division named below. A fuller knowledge of the special points mentioned below under these heads:—

(a) *Production.*—Production on a large and on a small scale. Land. Labour. Capital. Laws of Return. Population. Organisation of Labour. Control of Business.

(b) *Consumption.*—Demand and supply. Balance between the two.

(c) *Distribution.*—Rent. Wages. Profits. Systems of Rent and Land Tenure. Custom.

(d) *Exchange.*—Value. Price. Money. Bimetallism. Banks. Foreign Exchange. Credit. Trade, home and foreign. International Values.

(e) *Descriptive Economics.*—Companies and Partnership, Organisation of Industries, Trades Union, Co-operation in the spheres of Production and Distribution, Co-operative Credit Societies. Banking systems. Money Market. Stock Exchange.

(f) *Economic functions of Government.*—Economic Freedom. Government Regulation of, and Government participation in, the work of production, distribution and exchange. Taxation. Public Revenue and Expenditure. National Debt. Private Property. Socialism. Poor Laws. Free Trade. Protection. Reciprocity.

Economic Progress on the work of reproduction, distribution, and exchange.

## POLITICAL PHILOSOPHY.

Definition. Scope. Methods.

The State. Leading Theories of its origin and nature. Law. Government.

The People of the State. The Nation. Nationality as a constituent element of the State. Political Society. Its Divisions. Privileged Classes. Citizenship. Classes without political rights.

Rights and Duties. History of Natural Law. Practical consequences of a belief in Natural Law.

The Territory of the State. Its Political Divisions.

The Constitution of the State. Different forms of Constitutions. Monarchy, Oligarchy, Aristocracy, Democracy, City States. The outlines of the present constitutions of (a) France, (b) Germany, and (c) the United States. The present British constitution.

The Structure of the State. The Legislature. The Executive. The Judiciary. Power of Taxation. Control of the Public Purse. Test of Popular Liberty.

Growth of the State. Revolutions. Evolution. Functions of Legislation. The Individual and the State.

The End and Functions of the State. Sovereignty and Subjection. The nature and organisation of the Public Services.

APPLICATION OF THE PRINCIPLES OF POLITICAL ECONOMY  
TO INDIAN TOPICS.*The Geographical Factor.*

Physical features and conditions of the country and their bearings on Indian economic products. Facilities of Transport.

*The Special Factor.*

The Village system and Rural economy. Peasant proprietorship. Caste and its economic significance. Its influence on the organisation of Indian Industries. The Joint Family, and Hindu and Mahomedan Laws of Inheritance in regard to their economic bearings and consequences. Status and custom, and their influence on rents, wages and prices. Organisation of agriculture, handicraft and domestic industries in rural India. Caste Guilds. City Industries. Mahomedan Guilds and Industries. Indigenous organisation of Trade and Transport: of Banking and Agricultural credit.

*The Political Factor.*

Pax Britannica and its economic effects. Chief British Indian systems of Land-tenure with their economic consequences.

Foreign capital and organisation of labour, machinery, transport and credit, and the economic development of the country. Political relations of India to England, and their effect on the Balance of Trade.

The postulates of pure Economy, how modified in their application to Indian Consumption, Production, Distribution and Exchange.

*Consumption.*—The Indian standard of comfort as determining Indian consumption; the laws of consumption; statistics of Indian consumption; comparison with the United Kingdom.

*Production.*—

- (a) The economics of a mainly agricultural country as opposed to those of a mainly manufacturing country.
- (b) Special conditions of land, labour and capital as effecting Indian production.
- (c) Comparative efficiency of labour and cost of production in the chief industries in India and other countries. National wealth of India. Average production per head. Average income, gross and net.
- (d) The development of manufacturing industries in India. Foreign capital and skill. Technical Education and its relation to castes and guilds.

*Distribution.*—Rent in India, as effected by (1) State Landlordism, (2) Permanent Zemindary settlements, (3) Pressure of population on the soil, (4) Land-tenure legislation and rent laws. (5) Custom.

Wages in different employments. Average rates. Purchasing power of wages.

*Profits.*—Profits of Manufacture. The Profits of the middleman as agricultural money-lender, and as commercial agent.

*Exchange.*—The Indian Balance of Trade. India's debt and the Home Charges. Currency Legislation and Foreign Exchange. The Gold Standard and its influence on prices. The Gold Reserve. The Gold and Silver Currency. Purchasing power of money. Commercial Legislation.

*Public Finance.*—Direct and indirect taxation. Chief heads of Revenue. Nature of land revenue in India. Incidence of taxation in India. Chief heads of Expenditure.

## MENTAL AND MORAL PHILOSOPHY.

### I. PSYCHOLOGY—PASS AND HONOURS

*Scope.*—Psychology as a natural science. Laws of Mind. Relation of Psychology to Physiology. Relation of Psychology to Logic, Æsthetics, Ethics and Metaphysics.

**Methods.**—Subjective and objective. Physiological and Comparative Psychology. Experimental Psychology.

Consciousness, the Sub-conscious, the Unconscious, Relativity of Consciousness. Analysis and classification of Mental states and processes. Correlations of the Cognitive, the Emotional and the Conative elements. Unity of conscious life.

**The physical basis of Mental life.**—Nerves: structure and function. Brain: structure and function. Muscle: structure and function. Physiological processes corresponding to elementary psychical states.

**Mental development.**—Fundamental Laws and Processes. Attention. Discrimination, Assimilation, Association and Apperception.

**Sensation and its organic basis.**—Stimulus and Sensation. Relativity in the sphere of sensation. Weber's Law. Fechner's Law. Sensations of Organic Life. Organs and Sensations of Taste, Smell, Touch, Hearing and Sight. Muscular Consciousness and its Physiological basis. Sensation and movement. Qualities of Sensation.

**Perception.**—Perception and its object. Perception of Externality. Localisation. Perception of space. Free movement. Tactile space. Visual space. Perception, direct and indirect, of Impenetrability. Movement, Extension, Figure, Magnitude, Weight, Solidity, Distance and Direction.

**Ideation.**—Percept and Image. Retention, Representation and Recognition. Association and Suggestion, Construction, Expectation: their forms, conditions and applications. Hallucinations and Illusions. Reverie and Dream.

**Consciousness of duration.**—The time series, and spatial order. Apprehension of things in spatial and temporal order.

**Elaboration.**—Nature of thought. Judgment and its categories. Abstraction, conception and classification, reasoning, language and thought and their correlated growth. Elaboration of the external world in idea. Conception of Law. Idea of interdependence.

**Belief.**—Its nature and grounds

**Feelings.**—Feeling and organism. Expression. Pleasure, pain. Law of Self-conservation. Development of Feeling.

**Classification of feelings.**—The sense-feelings. Vital feelings.

**Relativity in the sphere of feelings.**—Relative feelings. surprise.

**Emotions.**—Joy and sorrow, hope and fear; anger, love and hate. Egoistic emotions, Social emotions, Sympathy, Intellectual emotions. Æsthetic emotions,—the beautiful, the

sublime, the ridiculous. The Moral sentiment. The Religious sentiment.

*Conation*.—Primitive elements. Spontaneous. and Reflex action. Emotional expression and gesture. Ideo-motor action, Imitation and Play, Instinct, Heredity, Habit and their relation to the organism. Attention.

*Voluntary action*.—Its nature, origin and development. Impulse, Appetite, End, Desire and Motive. Conflict of Desires. Deliberation. Volition—purpose and intention, self-control, and formation of character.

*Consciousness of volition*.—Consciousness of freedom. The individual self in relation to the physical and the social environment.

## II. GÉNÉRAL PHILOSOPHY—PASS AND HONOURS.

*Philosophy*.—Definition and province. Relation of Philosophy to Epistemology. and Ontology. Relation of Philosophy to Science.

*Methods*.—Dogmatism, Scepticism, Criticism, and Dialectic.

*Knowledge*.—Philosophical knowledge as the analysis, criticism, and rationalisation of experience. Idealism, Realism and Ideal-Realism.

*Origin of Knowledge*.—*A priori* and *a posteriori* theories. Dogmatism and Criticism, Evolution and Dialectics

*Categories of Knowledge*.—Space, Time, Substance, Causality: the contents and origin of these ideas.

*Dialectics as applied to Knowledge*.—Subject, object and the absolute. Phenomenon and noumenon. The Finite and the Infinite. The Conditioned and the Unconditioned. The Relative and the Absolute.

The ideas of the World, the Soul, and God.

*The World*.—Reality. The World as a system of reals. Temporal and Spatial order. Matter and motion, Energy, Conservation and Correlation. The Causal series. Substance and Attribute. The Individual and the Universal. Realism and Nominalism. Mechanism and Life. Organisation. The species idea. Evolution in Nature. Mechanical and Teleological Evolution.

*The Soul*.—Consciousness and life. The physiological and the psychical series. Parallelism, and other theories of their relation. Mental evolution in the animal kingdom. Mental evolution in the race. Nature and origin of reason. The soul and the self. The empirical self, the individual self and the social self. Society and the individual. Custom and social morality. Organisation of Rights. The Ethos. Ethicality. Personality and personal rights. The Moral Law. The Moral Reason. The Noumenal self as distinguished from the empirical self.

*God.*—Contents of the idea. God as conditioning the world and the soul. God as the Absolute. The idea of the Absolute, and its implications. Relation of God to the world-series, and the soul-series. Types of Monism. Dualism and Pluralism. Transcendence and Immanence. Ultimate causality and end. Relation of God to man. Moral Government and Providence. Liberty and Necessity. Future Life and Eternity. The Cosmos considered *sub specie æternitatis*. The Universal reason.

### III. ETHICS—PASS AND HONOURS.

Definition, province and end of Ethics.

Relation of Ethics to Psychology, Sociology, Politics, Metaphysics and Theology.

Methods of Ethics: Leading Opinions on: Character of Ethical Science.

Actions: Moral and non-Moral: Analysis of Desire, Intention, Motive, End, Volition, Natural and Moral evil. Sin and Error.

Elements of the Moral Consciousness: Intellectual, Emotional, Volitional. Good and Evil. Right and Wrong. The Highest Good. Moral Sentiment.

Nature, Method, and Object of the Moral Judgment. Springs of action.

Postulates of Moral Judgment; Reason; Personality; Self-determination.

Conscience and Prudence. The Moral Faculty.

Moral Obligation; Nature, Grounds and source of. The seat of Authority in Morals. Moral Law. Sense of Duty. Merit and Guilt. Sanctions. Theory of Reward and Punishment.

The leading Ethical Standards and a critical estimate of them. Law—Divine, Political, Pleasure and Happiness, Egoism. Altruism. The Æsthetic Sense. Immutable Law and Eternal Fitness. Perfection and Self-realisation. Evolution, individual and social.

Relation of the Individual and Society. The social Organism. Moral Institutions.

Duties and Virtues: Nature of; and Principles of their classification. Conflict of Duties.

Growth of the character. Moral Progress in the Race. The Moral Ideal.

### HONOURS.

The additional Honour subjects shall include—

(a) Natural Theology.

(b) History of Philosophy.

(c) Special Texts to be selected from year to year, and Essay.



*Natural Theology.*

*Religion.*—Nature of. Relation to Science, Art, Philosophy, Morality.

Religion, Natural and Revealed.

*Theology.*—Relation to (a) Science of Religion and Comparative Religion, (b) Ethics, (c) Philosophy.

*The Religious Consciousness.*—Its originality, its contents. (a) The cognitive element—the idea of God as First Cause, as Ultimate ground, as the Infinite and the Absolute, as the Self. (b) The emotional element,—the religious sentiment,—awe, reverence, worship. (c) The volitional element, the sense of duty.

*Grounds of Belief in God.*—(a) The idea of the Perfect Being, of the Infinite, of the Absolute, of necessary Being, and the Contingency of the Cosmos, (b) the nature of causality and the Cosmological argument, (c) final cause, (d) conscience and Moral Law. Other grounds: consensus, intuition, criticism of experience and dialectic.

*Evidence of final cause.*—Adaptation, external and internal. Explanations.—Mechanism, design, immanent finality. Arguments against these; and substitutes offered. Criticism of the substitutes. Reconciliation of Mechanism and Teleologism in Immanent Finality. Resulting conception of evolution.

The Nature and Attributes of the Divine Being, with special reference to Divine Personality.

The World, its creation, and conservation. Providence and Divine Government, natural and moral.

The problem of Pain and Moral Evil.

Types of Religion, Philosophically considered.

*Theistic theories.*

*Quasi-theistic theories.*—Deism, Pantheism.

*Anti-theistic theories.*—Materialism, Naturalism, Phenomenalism, Agnosticism, Positivism, Pessimism; their import. origin and grounds.

*History of Philosophy.*

A general knowledge of the systems of Bacon, Descartes, Spinoza, Locke, Berkeley, Hume, Reid, Leibnitz and Kant.

*Selected Texts.*

Specially Selected Texts and Essay on subjects drawn from Pass or Honours Syllabuses or Texts.

The arrangement of papers for Pass and Honours shall be as follows:—

*Pass.*

First Paper	...	...	Psychology.
Second „	...	...	Ethics.
Third „	...	...	General Philosophy.

*Honours.*

First Paper	...	...	Psychology.
Second „	...	...	Ethics.
Third „	...	...	General Philosophy.
Fourth „	...	...	Natural Theology.
Fifth „	...	...	History of Philosophy.
Sixth „	...	...	Essay and Selected Texts.

## ANTHROPOLOGY.

The pass course in Anthropology shall be distributed as follows:—

*Paper I.*—General outlines of Anthropology.

*Paper II.*—Ethnology of India with special reference to some particular Province.

*Paper III.*—Practical Examination (simple measurements and observations).

The Honours course in Anthropology shall be distributed as follows:—

*Paper I.*—General outlines of Anthropology.

*Paper II.*—Ethnology of India with special reference to some particular Province.

*Papers III and IV.*—A general outline of the racial and cultural history of India.

*Papers V and VI.*—Practical Examination. (Candidates will be expected to be familiar with tribal and racial types and be able to take selected measurements of living persons.)

Suitable Books, Papers and other sources of study will be recommended from time to time by the Board of Higher Studies in Anthropology with a view to indicate the scope and extent of the knowledge expected to be possessed by the candidates.

## GENERAL.

1. A candidate must obtain in order to pass in the Pass Course—

In English	...	...	... 100 marks.
Vernacular or paper alternative to it	...	...	... 33 marks.
Any subject in Group A	...	...	... 100 marks.
Any subject in Group B in the Theoretical papers	60 marks		
and			
in the Practical paper	...	...	... 40 marks.

2. A candidate must obtain in order to pass in the Honours Course—

In English	...	...	... 180 marks.
Any subject in Group A	...	...	... 180 marks.
Any subject in Group B in the Theoretical papers	108 marks		
and			
in the Practical papers	...	...	... 72 marks.

3. A candidate must obtain, in order to qualify for Honours—

In English	...	...	... 240 marks.
Any subject in Group A	...	...	... 240 marks.
Any subject in Group B in the Theoretical papers	160 marks		
and			
in the Practical papers	...	...	... 80 marks.

4. If a candidate takes up the Pass Course in four subjects, he must, in order to pass the B.A. Examination, pass in each subject, and obtain 360 marks in the aggregate. If he passes and obtains 500 marks in the aggregate, he shall be declared to have passed with Distinction.

5. If a candidate takes up the Pass Course in three subjects, and the Honours Course in one subject, he must, in order to pass the B.A. Examination, pass in each subject, and obtain 468 marks in the aggregate. If he passes and also qualifies for Honours in his Honours subject he shall be declared to have obtained Second Class Honours in that subject. If he passes, qualifies for Honours in his Honours subject, and obtains 360 marks in that subject, he shall be declared to have obtained First Class Honours in such subject.

6. Any candidate who has failed in one subject only, and by not more than 5 per cent. of the full marks in that subject, and has shown merit by gaining 50 per cent. or more in the aggregate of the marks of the Examination, shall be allowed to pass. If any such candidate has taken up the Pass Course in three subjects, he shall not be declared to have passed with Distinction. But if the candidate has taken up the Pass Course in

three subjects and the Honours Course in one subject, and has qualified for Honours in such subject, he shall be allowed to retain his Honours and his place in the Honours list.

7. If the Examiners are of opinion that in the case of any candidate not covered by the preceding Regulation, consideration ought to be allowed by reason of his high proficiency in a particular subject or in the aggregate, they shall report the case to the Syndicate and the Syndicate may pass such candidate, or give him Honours, as the case may be.

## CHAPTER XXXIII.

### MASTER OF ARTS.

1. An examination for the degree of Master of Arts shall be held annually in Calcutta and at such other places as shall, from time to time, be appointed by the Syndicate and shall commence at such time as the Syndicate shall determine, the approximate date to be notified in the Calendar.

Any candidate who has passed the B.A. or the B. Com. Examination not less than two academical years previously may be examined for the degree of M.A. in any subject mentioned in paragraph 5, provided he has prosecuted a regular course of study in that subject for two academical years in a College or Colleges affiliated to the University in respect of that subject and standard or under one or more University Professors or Lecturers in that subject.

Any candidate who has passed the B.A. or the B. Com. Examination not less than three academical years previously may be admitted as a private student to the M.A. Examination in any of the subjects included in I-XV subject to the provisions of Section 19 of the Indian Universities Act.

In the case of any of the subjects included in I-XV in which there is for the time being no provision for a regular course of study under one or more University Professors or Lecturers, a candidate who has passed the B.A. or the B. Com. Examination not less than two academical years previously may be admitted to the M.A. Examination in that subject as a private student, subject to the provisions of Section 19 of the Indian Universities Act.

2. Every\* candidate shall send in his application with a certificate in the form prescribed by the Syndicate, and a fee of

\* Candidates who take up Mathematics shall send in their applications and fees to the Registrar six months before the commencement of the Examination.

Rs. 80 to the Registrar not less than three months before the Examination. If a student desires to appear in the M.A. Examination in subjects III, VI, VII, XI, or XXII, he shall give the Registrar one year's notice of the fact.

3. Any Master of Arts may, on payment of a fee of Rs. 80, be admitted to the M.A. Examination in any branch other than that in which he was previously examined, provided that if he takes any of the subjects XVI to XXIII, he has prosecuted a regular course of study in that subject for two academical years in a College or Colleges affiliated to the University in respect of that subject and standard, or under one or more University Professors or Lecturers in that subject. He shall, if his attainments come up to the standard prescribed for the degree of M.A. be granted a certificate to that effect stating the subject and class in which he has passed.

4. A candidate who fails to pass or to present himself for examination, shall not be entitled to claim a refund of the fee, but he may be admitted to any one or more subsequent M.A. Examinations on payment of a like fee of eighty rupees on each occasion.

5. A candidate may be examined in any of the following subjects :—

- (I) English.
- (II) Sanskrit.
- (III) Pali.
- (IV) Arabic.
- (V) Persian.
- (VI) Hebrew.
- (VII) Syriac.
- (VIII) Greek.
- (IX) Latin.
- (IX-A) French.
- (IX-B) German.
- (X) Indian Vernaculars.
- (XI) Comparative Philology.
- (XII) Mental and Moral Philosophy.
- (XIII) History.
- (XIV) Political Economy and Political Philosophy
- (XIV-A) Commerce.
- (XV) Mathematics.
- (XVI) Physics.
- (XVII) Chemistry.
- (XVIII) Physiology.
- (XIX) Botany.
- (XX) Geology.
- (XXI) Zoology and Comparative Anatomy.
- (XXII) Experimental Psychology.
- (XXIII) Anthropology.

6. There shall be a Practical Examination in subjects XVI to XXII, and candidates shall be required to pass in the practical portion of these subjects as well as in the theoretical portion defined in the Syllabuses.

In each of the subjects I to XV there shall be eight papers of four hours each, each carrying 100 marks.

In each of the subjects XVI to XXII there shall be four theoretical papers of four hours each and the practical examination shall extend over at least four days. The total marks shall be equally divided between the theoretical and practical portions of the Examination.

7. Candidates who have taken the Degree of B.A. with Honours in any of the subjects XV-XXII may be allowed to substitute a piece of research work for part of the M.A. Examination in that subject under the conditions laid down in the Regulations for the M.Sc. Degree.

In all these subjects the Syllabuses shall be the same as those prescribed for the M.Sc. Examination.

8. The limits of the subjects shall be as follows :—

### ENGLISH.

1. The M.A. course in English shall be divided into two groups.

2. The first four papers of each group shall be identical, and shall cover the following subjects :—

*Paper I.*—General History of English Literature.

*Paper II.*—The Drama

*Paper III.*—Poetry.

*Paper IV.*—Prose.

3. The course for the above papers shall include standard works in Prose, Poetry and the Drama, which shall be specified from time to time, and shall range from Chaucer down to the end of the 19th century, due regard being had to the relative importance of the different periods.

4. The remaining papers shall be taken from one of the following groups, but not from both :—

### GROUP A.

*Paper V.*—Chaucer, and the outlines of Historical English Grammar.

*Paper VI.*—Shakespeare and the Elizabethan Drama, or a selected period of Poetry.

*Paper VII.*—A selected period of Prose.

*Paper VIII.*—An Essay or Essays on subjects connected with the course.

The special periods in Papers VI and VII shall be specified from time to time ; no period shall be selected before Chaucer and not more than one shall be pre-Elizabethan.

#### GROUP B.

*Paper V.*—English language and literature prior to 1100.

*Paper VI.*—English language and literature from 1100 to 1500, including Chaucer.

*Paper VII.*—Historical English Grammar : including the elements of Teutonic Philology.

*Paper VIII.*—An Essay or Essays on subjects connected with the course.

5. In every paper where texts are prescribed, unseen passages shall be set from contemporary works, carrying 40 marks.

6. Questions on the text shall include—

- (a) Questions on the subject-matter, and
- (b) Questions on the language of the text.

A candidate who has taken his B.A. Degree with Honours in English may, subject to the conditions specified below, offer a thesis connected with some department of the subject in lieu of examination in two Papers. If the candidate has taken up Group A, the thesis will be allowed to be substituted for either Paper VI or VII, and Paper VIII. If the candidate has taken up Group B, the thesis will be allowed to be substituted for either Paper II, III or IV and Paper VIII.

The conditions to be fulfilled by a candidate who is allowed to offer a thesis are as follows :—

(a) He must have completed one year's study of the M.A. course in English under University Lecturers or in a College affiliated in English up to the M.A. standard.

(b) He must, at the end of the year, submit to the Board of Higher Studies in English an application for permission to offer a thesis in lieu of part of the Examination.

(c) The application shall indicate the subject and scope of the thesis he wishes to offer and must be recommended by the Professor or Professors under whom he has been working.

(d) If the application be granted by the Board of Higher Studies in English, the thesis must be prepared under the general direction of the Professor or Professors with whom the candidate is prosecuting his studies.

(e) The candidate shall deliver three copies of the thesis (printed or typewritten) to the Secretary to the Council of Post-Graduate Teaching in Arts at least one month before the first

day of the M.A. Examination at which he intends to present himself.

(f) The thesis shall be examined by a Board of three Examiners and the maximum number of marks assigned to the thesis shall be 200. The Examiners may, in their discretion, subject the candidate to a *viva voce* examination on the subject of the thesis.

(g) The name of a candidate whose thesis has been approved shall be marked with an asterisk in the list of successful candidates published in the Gazette and also in the University Calendar.

### SANSKRIT.

The course shall include the following :—

*Paper I.*—(a) One selected Ashtaka of the Rigveda, with Sayana's Commentary thereon.

(b) Sayana's Introduction to his Commentary on the Rigveda ... 100 marks.

*Paper II.*—Siddhanta-Kaumudi (whole) ... 100 marks.

*Paper III.*—(a) The general principles and methods of Comparative Philology, including the elements of Phonetics.

(b) The history of the Indo-European family of languages, with special reference to Sanskrit (Vedic and Classical), and Prakrit.

(c) Sabda-saktiprakasika, and its bearing on the science of language ... 100 marks.

*Paper IV.*—Two Essays, (a) dealing with some subject connected with the history of Sanskrit literature generally ; (b) dealing with some subject connected with the history of the special department covered by the group taken up ... 100 marks.

*Papers V, VI, VII and VIII.*—One of the following groups to be selected by the candidate :—

#### A. (Literature.)

*Paper V.*—(a) Poetry texts : selected portions of Naishadha Charita, Kamandaki Nitisa, Sukranitisara, Mahabharata (Santiparva, Rajadharma), and of either Kiratarjuniya or Sisupalbadha ... 75 marks.

(b) Translation from English into Sanskrit ... 25 marks.

*Paper VI.*—(a) Drama texts : Five of the following dramas, together with as much of Vararuchi's Prakrit Prakasa as is necessary for the appreciation of the Prakrit passages :—



Vikramorvasi, Malavikagnimitra, Malati Madhava, Mahavi-  
racharita, Mrichchhakatika, Karpuramanjari, Venisan-  
hara, Prabodh Chandrodaya, Balaramayana.

75 marks.

(b) Translation from English into Sanskrit ... 25 marks.

*Paper VII.*—(a) Prose texts : Selected portions of two of the  
following, namely, Kadambari, Harshacharita, Vasa-  
vadatta and Dasakumaracharita ... 75 marks.

(b) Unseen passages in Sanskrit Prose for translation into  
English ... 25 marks.

*Paper VIII.*—(a) Rhetoric and Prosody, namely, Kavyaprakas,  
Ekavali, Sarasvati, Kanthabharana, Sahityadarpana  
and either Pingala's Chhanda Suttras with Halayu-  
dha's Vritti or Chhandomanjari ... 75 marks.

(b) Unseen passages in Sanskrit Poetry for translation into  
English ... 25 marks.

#### B. (*Vedas.*)

*Paper V.*—(a) Yaska's Nirukta and Pingala's Chhandasutras  
with Halayudha's Vritti ... 75 marks.

(b) Pratisakhya of the Rig-Veda, with the commentary of  
Uvata ... 25 marks.

*Paper VI.*—(a) Aitareya Brahmana with Sayana's Commentary  
75 marks.

(b) Simple unseen passages in Vedic Sanskrit for transla-  
tion into Classical Sanskrit. (The interpretations of  
any recognised Indian School will be accepted.)

25 marks.

*Paper VII.*—(a) Selected portions of the Chhandogya and Bri-  
hadaranyaka Upanishads, with Sankara's Commen-  
tary ... 75 marks.

(b) Simple unseen Sanskrit passages from any Upanishad  
for translation into English ... 25 marks.

*Paper VIII.*—(a) Grihya Sutra—either Asvalayana or Gobhila—  
with commentary ... 75 marks.

(b) Translation from English into Sanskrit ... 25 marks.

#### C. (*Mimansa and Smriti.*)

*Paper V.*—(a) Selected portions of Mimansa Sutras with Sabara  
Bhashya ... 75 marks.

(b) Simple unseen Sanskrit passages from any treatise or  
commentary on the Mimansa Philosophy, such as the  
Sloka-Vartika and the Tantra-Vartika, for translation  
into English ... 25 marks.

*Paper VI.*—(a) Jaiminiya Nyaya Mala Vistara and Mimansa-  
Nyaya-Prakasa ... 75 marks.

(b) Simple unseen Sanskrit passages from any treatise or  
commentary on the Mimansa Philosophy, such as the

- Mimansa-Balaprakasa, and the Tupteeaka, for translation into English ... 25 marks.
- Paper VII.*—(a) Manu Samhita with Kulluka's Commentary :  
Dharma Sutras of Apastamba and Gautama with  
Haradatta's commentary ... 75 marks.
- (b) Grihya Sutra—either Asvalayana or Gobhila  
25 marks.
- Paper VIII.*—(a) Yajnavalkya Samhita with Vijnanesvara's  
Mitakshara.  
Parasara's Institute with Madhava's Commentary 75 marks.
- (b) Translation from English into Sanskrit ... 25 marks.

#### D. (Vedanta.)

- Paper V.*—(a) Vedantasara (Jacob's Edition), Panchadasi Vedanta Paribhasha, Hastamalaka (with Commentary), and Siddhantaleśa ... 75 marks.
- (b) Simple unseen Sanskrit passages from any work on Vedanta Philosophy, such as the Vivarana-prameya Sangraha, for translation into English 25 marks.
- Paper VI.*—(a) Vedantasutras with Sankara Bhashya 75 marks.
- (b) Translation from English into Sanskrit ... 25 marks.
- Paper VII.*—(a) Selected portions of Sribhashya ... 75 marks.
- (b) Advaita-Brahma-Siddhi ... 25 marks.
- Paper VIII.*—(a) Bhagavadgita and selected portions of the Upanishads, with Sankara Bhashya 75 marks.
- (b) Passages for translation into English from the Anubhashya and the Saivabhashya ... 25 marks.

#### E. (Sankhya and Yoga.)

- Paper V.*—(a) Sankhyasutra of Kapila, with Vritti of Aniruddha.  
Sankhya-Karika of Iswarakrishna, with Bhashya of Gaurapada ... 75 marks.
- (b) Simple unseen Sanskrit passages from any treatise or commentary on the Sankhya Philosophy, for translation into English ... 25 marks.
- Paper VI.*—(a) Sankhya Pravachana Bhashya, Sankhya-Sara and Sankhya-Tattva-Kaumudi ... 75 marks.
- (b) Translation from English into Sanskrit ... 25 marks.
- Paper VII.*—(a) Yoga Sutras of Patanjali, with Bhashya of Vyasa and Vritti of Bhoja. Yoga-Vartika of Vijnana-Bhikshu ... 75 marks.
- (b) Simple unseen Sanskrit passages from any treatise or commentary of the Yoga Philosophy, for translation into English ... 25 marks.
- Paper VIII.*—(a) Selected portions of the Yoga-Vasishtha-Sarvadarsan Sangraha ... 75 marks.

- (b) Translation from English into Sanskrit ... 25 marks.

*F. (Nyaya and Vaisesika.)*

*Paper V.*—(a) Nyayasutras of Gautama, with the Bhashya of Vatsyayana, Vartika of Udyotkara, and Vritti of Visvanatha ... 75 marks.

- (b) Simple unseen Sanskrit passages from any treatise or commentary on the Nyaya Philosophy, for translation into English ... 25 marks.

*Paper VI.*—(a) Nyayamanjari of Jayanta Bhatta : Selected portions of Khandana Khanda Khadya of Sriharsha ... 75 marks.

- (b) Translation from English into Sanskrit ... 25 marks.

*Paper VII.*—(a) Bhasha Paricheheda, Siddhanta-muktavali, Kusumanjali of Udayanacharyya with Commentary of Ruchidatta and gloss of Vardhamana 75 marks.

- (b) Translation from English into Sanskrit ... 25 marks.

*Paper VIII.*—(a) Vaisesika Sutras of Kanada, with Bhashya of Prasastapada, Nyayakandali of Sridhara, and Vivriti of Jayanarayana.

Saptapadarthi of Sivaditya with Commentary of Yatindra-madhava ... 75 marks.

- (b) Simple unseen Sanskrit passages from any treatise or commentary on the Vaisesika Philosophy, for translation into English ... 25 marks.

*G. (General Philosophy.)*

*Paper V.*—(a) Sankhyasutras of Kapila with Vritti of Aniruddha. Either Sankhya-Tattva-Kaumudi or Sankhya. Karika. Yogasutras of Patanjali, with the Bhashya of Vyasa and Vritti of Bhoja ... 75 marks.

- (b) Simple unseen Sanskrit passages from any work on Philosophy for translation into English 25 marks.

*Paper VI.*—(a) Nyayasutras of Gautama with Vashya of Vatsyayana and Vritti of Visvanatha. Vaisesikasutras of Kanada, with Vashya of Prasastapada, and Nyayakandali of Sridhara ... 75 marks.

- (b) Translation from English into Sanskrit ... 25 marks.

*Paper VII.*—(a) Vedantasara (Jacob's Edition), Bhagavadgita and selected portions of Vendantasutras, with Sankara Bhashya ... 75 marks.

- (b) Translation from English into Sanskrit ... 25 marks.

*Paper VIII.*—(a) Nyayaratnamala of Parthasarathi Misra ; Mīmāṃsā Nyaya Prakāśa of Apadeva. Selected portions

of the Upanishads, with Sankara Bhashya

75 marks.

- (b) Simple unseen Sanskrit passages from any work on Philosophy for translation into English 25 marks.

#### H. (Prakrit.)

*Paper V.*—(a) Two selected Jaina canonical texts ... 75 marks.

- (b) Translation from English into Sanskrit (or Prakrit, at the option of the candidate) ... 25 marks.

*Paper VI.*—(a) Prakrit portions of the following dramas :—

Sakuntala, Vikramorvasi, Malavikagnimitra, Uttaracharita, Malatimadhava, Mahavira Charita, Mricchhakatika, Mudrarakashasa, Ratnavali, Karpuramanjari, Venisanhara ... 75 marks.

- (b) Translation from Sanskrit into Prakrit .. 25 marks.

*Paper VII.*—(a) Setubandha; Gaudavaho; Kumarapalacharita, together with a general knowledge of Prakrita Paingalam ... 75 marks.

- (b) Simple unseen passages in Prakrit for translation into English ... 25 marks.

*Paper VIII.*—(a) Prakrit Grammar, as in Vararuchi's Prakrita Prakas (Cowell), Chhandah's Prakrita Lakshanam (Hoernle), Hemchandra (Pischel).

Candidates are also expected to be familiar with the substance of Hoernle's Grammar of the Gaudian languages ... 75 marks.

- (b) Simple unseen passages in Prakrit for translation into Sanskrit ... 25 marks.

#### I (Epigraphy and History.)

*Paper V.*—(a) Rājatarangini and its continuations with Stein's Introduction and Commentary ... 70 marks.

- (b) Unseen passages in Sanskrit for translation into English ... 30 marks.

*Paper VI.*—(a) Inscriptions of Asoka ... 80 marks.

- (b) Early Indian Alphabets ... 20 marks.

*Paper VII.*—Selected Inscriptions from Epigraphia Indica. Fleet's Corpus Inscriptionum, and Prachina Lekhamala ... 100 marks.

*Paper VIII.*—(a) Ancient Geography of India ... 50 marks.

- (b) Translation from English into Sanskrit ... 50 marks.

\* Questions on prescribed texts (except on Grammar) in the compulsory papers as also in every group shall include—

- (i) Passages for translation into English (this shall not carry more than 25 marks in any one paper).

- (ii) Questions on the subject-matter and on the language of the set books.
- (iii) Questions on Grammar arising from the texts.
- (iv) Passages for translation into English or discussion in simple Sanskrit, taken from standard Sanskrit Commentaries on the texts.

In Groups C, D, E, F, and G, the questions on the prescribed texts shall also include alternative questions on philosophical topics for discussion in English (or in simple Sanskrit at the option of the candidate); in answering such questions, candidates will be expected to be able to state the views of the School taken up and controvert the views of the other Schools.

The first paper shall include questions on the History of Vedic Literature, and the History of Philosophy and Religion during the Vedic Period ; such questions shall carry 25 marks.

The second paper, and in Group H, the eighth paper, shall include questions on the practical application of the rules of grammar.

The eighth paper in Group A shall include questions framed with a view to test the ability of candidates to apply the rules of rhetoric to passages from the prescribed texts.

Passages set for translation from English into Sanskrit shall be translated into Classical (and not Vedic) Sanskrit.

The Syndicate shall, upon the recommendation of the Board of Studies concerned, select the texts in accordance with the syllabus, and may also recommend books or specify editions to indicate more fully the extent and standard of knowledge required in any paper.

### PALI.

1. The M. A. course in Pali shall be divided into four groups.

2. The first four papers of all the groups shall be identical and shall cover the following subjects :—

*Paper I.*—Selected portions of the Sutta-pitaka.

*Paper II.*—Selected portions of the Vinaya-pitaka.

*Paper III.*—Pali and Prakrit Grammar and Philology.

*Paper IV.*—History of Pali Literature and Buddhism.

3. The remaining papers shall be taken from one of the following groups :—

### GROUP A—(LITERARY).

*Paper V.*—Selected portions of the Jatakas.

*Paper VI.*—Selected portions of Pali Literature in general.

*Paper VII.*—Inscriptions.

*Paper VIII.*—Essay and Translation of unseen Pali passages into English.

GROUP B—(PALI PHILOSOPHY).

*Paper V.*—Selected portions of the Abhidhamma-pitaka.

*Paper VI.*—Selected portions of the non-canonical works.

*Paper VII.*—Selected portions of the canonical and non-canonical works with commentaries.

*Paper VIII.*—Essay and Translation.

GROUP C—(EPIGRAPHY AND HISTORY).

*Paper V.*—(a) Selected portions of the Pali annals and chronicles.  
(b) Unseen passages for translation into English.

*Paper VI.*—Inscriptions of the Maurya period.

*Paper VII.*—Cave-inscriptions and inscriptions of the Gupta period.

*Paper VIII.*—Ancient Geography of India and Essay.

GROUP D—(MAHAYANA LITERATURE AND PHILOSOPHY).

*Paper V.*—Selected texts (prose and poetry) of Mahayana Literature.

*Paper VI.*—Selected texts of Madhyamika and Yogachara Philosophy.

*Paper VII.*—Selected texts of Buddhist works on Nyaya.

*Paper VIII.*—(a) Grammar.

(b) Essay.

HEBREW.

1. The course shall include the following:—

*Paper I.*—Passages for translation from English into Hebrew.

*Paper II.*—Passages for translation into English from certain specified books of the Old Testament, together with such questions on the Grammar, Prosody and literary history of the language as arise directly out of these books.

*Paper III.*—Simple passages from unspecified books in Hebrew for translation into English. Candidates may be required to point the passages as well as to translate them.

*Paper IV.*—Passages for translation into English from prescribed Post-Biblical books, with questions arising out of the subject-matter of the texts.

*Paper V.*—Passages for translation into English from specified books in Syriac, including always a portion of the Peshitta version of the New Testament, together with questions on the language and subject-matter of the passages set.

*Paper VI.*—History and antiquities of the Jews with special reference to the results of modern research.

*Paper VII.*—Comparative Philology of the Semitic languages, or prescribed texts in Rabbinical Hebrew.

*Paper VIII.*—Essay on some subject connected with the course.

## ARABIC.

The course in Arabic shall include the following works or portions thereof:—

### *Literature.*

*Kitáb-ul-Aghání.*

*Yatímat-ut-Dahr.*

### *Tafsír.*

*Qor'án* with the Commentary of Zamakhshari.

### *Hadis.*

*Mishkát-ul-Masábíh.*

### *Philosophy.*

*Isáhrát* of Avicenna.

### *History.*

*Majma-ul-Buldán* of Bilázuri.

### *Grammar.*

*Zamakhshari's Mufasssal.*

### *Rhetoric.*

*Fará'id* of Mahmúd Jawnpúrí.

2. The course shall also include Arabic Prosody, the outlines of Mahomedan history and a general knowledge of the history of Arabic literature.

The Board of Studies concerned may make such modifications in the list of books as may seem to them desirable.

The scope of the subject of each paper shall from time to time be defined by the Board concerned and the distribution of marks may be modified in such manner as may seem desirable by the Board.

3. The subjects and the marks shall be distributed as follows:—

*Paper I.*—(a) Questions on the *Kitáb-ul-Aghání*, ... 75 marks.

(b) English passages for translation into Arabic 25 marks.

*Paper II.*—(a) Questions on *Yatímat-ut-Dahr* ... 75 marks.

(b) English passages for translation into Arabic 25 marks.

*Paper III.*—(a) Unseen passages of Arabic Prose for translation into English ... 60 marks.

(b) Questions on the History of Arabic literature 40 marks.

*Paper IV.*—(a) Questions on the *Mufasssal* ... 50 marks.

(b) Questions on the *Fará'id* ... 50 marks.

*Paper V.*—(a) Questions on the prescribed portion of the *Qor'án* with the Commentary ... 50 marks.

(b) Questions on the *Mishkát-ul-Masábíh* ... 50 marks.

<i>Paper VI.</i> —(a) Questions on the Ishárát	... 50 marks.
(b) Questions on the Majma-ul-Buldán	... 50 marks.
<i>Paper VII.</i> —Questions on Mahomedan History.	
(a) General	... 70 marks.
(b) India	... 30 marks.
<i>Paper VIII.</i> —Essay on some subject connected with the course	... 100 marks.

Questions on the prescribed texts shall include—

- (i) Passages for translation into English, not carrying more than 25 marks in any one paper.
- (ii) Questions on the subject-matter and the language of the passages set.

### PERSIAN.

1. The course in Persian shall include the following works or portions thereof:—

*Poetry.*—The *Hadíqa* of Sanáí.  
The *Mantiq-ul-Tair* of 'Attár.  
The *Díwán* of Násir-i-Khusraw.  
The *Qasá'id* of Zahr Fáyábi

*Prose.*—*Tazkira* of Dawlat Shah.  
The *Tazkira* of 'Awfí.  
The *Kímíyá-i-Sasádat* of Ghazzáli.  
The *Durra-i-Nádíra*.  
The *Hadá'iq-ul-Balághat*.

*Arabic Prose.*—The prose selections prescribed for the B.A. Pass Course.

2. The course shall also include the outlines of Mahomedan history and the history of the Persian language and literature.

The Board of Studies concerned may make such modifications in the list of books as may seem to them desirable.

The scope of the subject of each paper shall from time to time be defined by the Board concerned and the distribution of marks may be modified in such manner as may seem desirable by the Board.

3. The subjects and the marks shall be distributed as follows:—

*Paper I.*—Questions on the *Hadíqa* of Saná'í and the *Mantiq-ut-Tair* of 'Attár. ... 100 marks.

*Paper II.*—Questions on the remaining prescribed poetry texts ... 100 marks.

*Paper III.*—(a) Questions on the *Tazkiras* of Dawlat Shah and of 'Awfí ... 50 marks.



(b) Questions on the remaining Persian	Prose	
texts	...	50 marks.
<i>Paper IV.</i> —Questions on Arabic Prose texts	...	100 marks.
<i>Paper V.</i> —(a) Unseen Persian passages for translation into English	...	50 marks.
(b) Questions on the Philology of the Persian language	...	50 marks.
<i>Paper VI.</i> —(a) Translation from English into Persian	...	70 marks.
(b) Questions on the Rhetoric and Prosody	...	30 marks.
<i>Paper VII.</i> —(a) Questions on the history of Persian literature	...	50 marks.
(b) Questions on Mahomedan history	...	50 marks.
<i>Paper VIII.</i> —Essay on a subject connected with the course.		

Questions on the prescribed texts shall include—

- (i) Passages for translation into English, not carrying more than 25 marks in any one paper.
- (ii) Questions on the subject-matter and language of the passages set.

### GREEK.

The course shall include:—

<i>Paper I.</i> —(a) Passages from prescribed prose texts	70 marks.
(b) Unseen passages of Greek Prose for translation into English	30 marks.
<i>Paper II.</i> —(a) Passages from prescribed Poetry texts	70 marks.
(b) Unseen passages of Greek poetry for translation into English	30 marks.
<i>Paper III.</i> —(a) Passages from prescribed Greek Plays	70 marks.
(b) Unseen passages from the Greek Dramatists for translation into English	30 marks.
<i>Paper IV.</i> —Passages in English for translation into Greek prose	100 marks.
<i>Paper V.</i> —The Philology of the Greek tongue and the elements of Comparative Philology	100 marks.
<i>Paper VI.</i> —The General History and Antiquities of Greece	100 marks.
<i>Paper VII.</i> —History of Greek Literature	100 marks.
<i>Paper VIII.</i> —Essay on some subject connected with the course	100 marks.

In Papers I. II and III the questions on prescribed texts shall include—

- (i) Passages for translation into English, which shall not carry more than 25 marks in any one paper.

- (ii) Questions on the subject-matter and language of the texts.

### LATIN.

The course shall include—

*Paper I.*—Passages from prescribed Poetry texts.

*Paper II.*—Passages from prescribed Prose texts.

*Paper III.*—Unseen passages from Latin authors for translation into English.

*Paper IV.*—Passages in English for translation into Latin prose.

*Paper V.*—The Philology of the Latin tongue and the elements of Comparative Philology.

*Paper VI.*—The general History and Antiquities of Rome.

*Paper VII.*—History of Classical Latin Literature.

*Paper VIII.*—Essay on some subjects connected with the course.

In Papers I and II the questions on the prescribed texts shall include—

- (i) Passages for translation into English which shall not carry more than 25 marks in any one paper.
- (ii) Questions on the subject-matter and language of the texts.

### FRENCH.

The course shall include—

#### PAPER 1.

Literary History of France from the earliest times to the beginning of the Great War. This would also include the political and the cultural history of the country so far as it is reflected in the literature.

#### PAPER 2.

Literature of the Seventeenth Century (the Classical Age).

#### PAPER 3.

Modern Literature, 1850-1913.

#### PAPER 4.

Translation from English into French (50 marks).

Essay on some subject connected with French literature or culture (50 marks).

*A minimum of 25 marks must be obtained by the candidate in the translation section of this paper in order to pass the*

*examination at all. In the essay section the candidate should get the choice of one out of three subjects.*

### GROUP A (Literary).

#### PAPER 5.

Literature of the Sixteenth Century.

#### PAPER 6.

Literature of the Eighteenth Century up to the beginning of the French Revolution.

#### PAPER 7.

Literature from the beginning of the French Revolution up to 1850.

#### PAPER 8.

Outlines of the Historical Grammar of the French Language and Modern French Grammar.

### GROUP B (Linguistic).

#### PAPER 5.

General History of the Growth and Development of the French Language from Latin.

#### PAPER 6.

History of the French Language up to the Thirteenth Century studied in texts.

#### PAPER 7.

History of the French Language during the Fourteenth and Fifteenth Centuries studied in texts.

#### PAPER 8.

History of the French Language from the Sixteenth Century onwards studied in texts.

### GERMAN.

The Course shall include—

#### PAPER 1.

Literary History of Germany from the earliest times to the beginning of the Great War. This would also include the poli-

tical and cultural history of the country as far as it is reflected in the Literature.

PAPER 2.

Literature from 1760 to 1800.

PAPER 3.

Literature from 1870 to 1913.

PAPER 4.

Translation from English into German (50 marks).

Essay on some subject connected with German literature or culture (50 marks).

*A minimum of 25 marks must be obtained by the candidate in the translation section of this paper in order to pass the examination at all. In the essay section the candidate should get the choice of one out of three subjects.*

GROUP A (Literary).

PAPER 5.

Literature of the Sixteenth and Seventeenth Centuries.

PAPER 6.

Literature from 1700 to 1760.

PAPER 7.

Literature from 1810 to 1870.

PAPER 8.

Outlines of the Historical Grammar of the German Language and Modern German Grammar.

GROUP B (Linguistic).

PAPER 5.

General History of the Growth and Development of the German Language from the earliest times.

PAPER 6.

Gothic and Old English.

PAPER 7.

Old High German.

## PAPER 8.

Middle High German and Early New High German (up to 1700).

## INDIAN VERNACULARS.

Candidates will be examined in :—

(A) An Indian Vernacular as principal subject, to be selected by the candidate from a list prescribed from time to time by the Board of Higher Studies in Indian Vernaculars.

(B) A second Indian Vernacular as subsidiary subject, to be selected by the candidate from a list prescribed from time to time by the Board of Higher Studies in Indian Vernaculars.

(C) Elements of two of the following languages, to be selected by the candidates with special reference to their influence on the Vernaculars chosen as principal and subsidiary subjects :

Prakrit, Pali, Persian, Pashtu.

This list may be varied from time to time by the Board of Higher Studies in Indian Vernaculars.

(D) Elements of Indo-Aryan or such other branch of Philology as may be prescribed from time to time by the Board of Higher Studies in Indian Vernaculars.

Four papers shall be set on (A), two on (B), one on (C) and one on (D).

The four papers on (A) shall be distributed as follows :—

*Paper I.*—History of the Literature of the Principal Language taken up.

Candidates will be expected to possess a general knowledge on the entire subject as also a special knowledge of a prescribed period or movement in literature.

*Paper II.*—Old Texts and Unseens.

*Paper III.*—Mediæval and Modern Texts and Unseens.

*Paper IV.*—(a) A prescribed period of literary or linguistic history and (b) a selected movement, literary, scientific, social or religious.

Candidates will be required in this paper to give their answers in the form of two essays, one of which at least must be composed in the Vernacular taken up as principal subject.

The two papers on (B) shall be distributed as follows :—

*Paper V.*—Easy prescribed Texts and Unseens.

*Paper VI.*—Elements of Grammar, Philology and Literary History.

The paper on (C) shall include questions on easy prescribed texts and simple questions on Grammar.

The paper on (D) shall be devoted to Indo-Aryan or other prescribed branch of Philology, in so far as it elucidates the origin and development of Indian Vernaculars.

Each of the eight papers shall carry 100 marks.

The scope of the subject included in each paper shall be defined and suitable books recommended from time to time by the Board of Higher Studies in Indian Vernaculars.

A candidate who has taken his B.A. degree with Honours in a language, or has taken his M.A. degree in a language or Comparative Philology may, subject to the conditions specified below, offer a thesis, in lieu of an examination in Papers III and IV.

The conditions to be fulfilled by a candidate who is allowed to offer a thesis are as follows :—

(a) He must have completed one year's study of the M.A. course in Indian Vernaculars under University teachers.

(b) He must, at the end of the year, submit to the Board of Higher Studies in Indian Vernaculars an application for permission to offer a thesis in lieu of part of the examination.

(c) The application shall indicate the subject and scope of the thesis he wishes to offer and must be recommended by the Professor or Professors under whom he has been working.

(d) If the application be granted by the Board of Higher Studies in Indian Vernaculars, the thesis must be prepared under the general direction of the Professor or Professors with whom the candidate is prosecuting his studies.

(e) The candidate shall deliver three copies of the thesis (printed or type-written) to the Secretary to the Council of Post-Graduate Teaching in Arts at least one month before the first day of the M.A. Examination at which he intends to present himself.

(f) The thesis shall be examined by a Board of three Examiners and the maximum number of marks assigned to the thesis shall be 200. The Examiners may, in their discretion, subject the candidate to a *viva voce* examination on the subject of the thesis.

(g) The name of a candidate whose thesis has been approved shall be marked with an asterisk in the list of successful candidates published in the Gazette and also in the University Calendar.

### COMPARATIVE PHILOLOGY.

Eight Papers shall be set as follows :—

#### PAPER I.

General Principles of Philology and the Science of Language Psychology of Speech. The History of the Science of Grammar

and of Language in India and in the Western lands. The various linguistic areas of the world. The Indo-European family of Languages and its distinguishing features. The I.E. Languages compared and contrasted with the Isolating, the Agglutinative and the Semitic type of Languages. The various sub-families of the I.E. with their important sub-divisions and their distinguishing characteristics. The Aryan or Indo-Iranian branch and its important sub-divisions. The distinguishing features of the Aryan branch. The chief linguistic differences between Indian and Iranian Languages. The Indo-Aryan branch contrasted with the other Non-Aryan stocks of India (Dravidian, Kol or Munda and Mon-Khmer and Tibeto-Chinese), Semantics.

### PAPER II.

Principles of Phonetics. The structure of vocal organs. The production and classification of sound. The representation of sounds by phonetic alphabets. The chief systems of phonetic alphabets. The causes of sound change. "Dialectic Growth." "Phonetic Decay." The sounds of I.E. Urprache. The Phonology of Sanskrit and Avesta compared. The history of Sanskrit sounds and of Avesta sounds. Accent, and the sound changes resulting from shifting accent. Ablaut, The Development of writing and of Alphabets. Elements of Palæography, specially Indian. The Vernacular Alphabets, their origin and development.

### PAPER III.

The Principles of Morphology and Word-building. Development and differentiation of the Parts of Speech. The significance of Ablaut in the linguistic development. The Morphology of Sanskrit as compared to Avesta and other I.E. Languages, Nouns, Gender, Number, Case, Pronouns, Adjectives—Degrees of Comparison; Numerals; Verbs,—Systems of Tenses and Moods; Indeclinables, the *Krit* and *Taddhita* affixes in Sanskrit. The comparative Morphology of Vedic and Classical Sanskrit.

### PAPER IV.

Growth of Dialects. The condition of Dialectic Growth and Differentiation. History of linguistic development in India, (i) from Vedic to Classical Sanskrit, (ii) Prakrit and Pali. History of Prakrit dialects. Distinguishing characteristics of the various Prakrits. Elements of the Comparative Phonology and Morphology of Prakrit and Pali.

N.B.—Candidates are expected to be acquainted with the main outlines of the Literary History of the Languages concerned.

## PAPER V.

Linguistic History of India from the Prakrits to the Neo-Indian Dialects. Elements of the Linguistic History, Phonology and Morphology of the following Modern Aryan Dialects of India—Bengali, Bihari, Oriya, Hindi (Eastern and Western), Marathi, Panjabi, Sindhi and Gujrati (including Rajasthani). The candidate should be acquainted with the broad outlines of the Literary History of these Dialects ; and he should possess a detailed knowledge of the Linguistic History of his mother-tongue.

## PAPER VI.

Comparative Syntax of Vedic and Classical Sanskrit, and of the Prakrit and Neo-Indian Dialects. The mother-tongue of the candidates should be studied in detail.

## PAPER VII.

Either

Urgeschichte, with special reference to Indo-Iranian Antiquities. Comparative Mythology.

Elements of Avesta and Iranian Philology. Phonology, Morphology and Syntax of Avesta as compared to Sanskrit. Candidates are expected to be acquainted with the Avesta Alphabet and to translate from the Texts prescribed into either English or Sanskrit.

OR

Elements of Dravidian, Kol or Munda and Tibeto-Chinese Linguistics. Elementary Grammar of Primitive Dravidian or Tamil. Pre-Aryan origins. Non-Aryan influences on Indo-Aryan Speech.

## PAPER VIII.

Essay—

Candidates will be given a choice from at least *four* subjects.

A candidate who has taken his B.A. degree with Honours in a language, or has taken his M.A. degree in a language, may, subject to the conditions specified below, offer a thesis on any subject included within the scope of Papers IV and V, in lieu of an examination in those two papers.

The conditions to be fulfilled by a candidate who is allowed to offer a thesis are as follows:—

(a) He must have completed one year's study of the M.A. course in Comparative Philology under University Teachers.



(b) He must, at the end of the year, submit to the Board of Higher Studies in Comparative Philology an application for permission to offer a thesis in lieu of part of the Examination.

(c) The application shall indicate the subject and scope of the thesis he wishes to offer and must be recommended by the Professor or Professors under whom he has been working.

(d) If the application be granted by the Board of Higher Studies in Comparative Philology, the thesis must be prepared under the general direction of the Professor or Professors with whom the candidate is prosecuting his studies.

(e) The candidate shall deliver three copies of the thesis (printed or type-written) to the Secretary to the Council of Post-Graduate Teaching in Arts, at least one month before the first day of the M.A. Examination at which he intends to present himself.

(f) The thesis shall be examined by a Board of three Examiners and the maximum number of marks assigned to the thesis shall be 200. The Examiners may, in their discretion, subject the candidate to a *viva voce* examination on the subject of the thesis.

(g) The name of a candidate whose thesis has been approved shall be marked with an asterisk in the list of successful candidates published in the Gazette and also in the University Calendar.

## MENTAL AND MORAL PHILOSOPHY.

1. The course in Mental and Moral Philosophy shall be as follows :—

Paper I—History of Ancient and Mediæval European Philosophy.

„ II—History of Modern European Philosophy.

„ III—Indian Philosophy.

Papers IV and V—Theory of Knowledge and Metaphysics.

„ VI and VII—Any one of the following subjects to be selected by the candidate, two papers being set in each :—

(i) Psychology, (ii) Logic, (iii) Ethics and Social Philosophy, (iv) Philosophy of Religion, (v) Some special branch of Indian Philosophy.

Paper VIII—Essay.

2. Questions bearing on General Philosophy and Metaphysics may be included in any paper.

3. The limits of the subjects shall be defined and books shall be recommended from time to time by the Board of Studies concerned.

## HISTORY.

1. The course in History shall be as follows :—

*Paper I.*—A selected period of English History.

*Paper II.*—A selected period of Indian History.

*Paper III.*—General History of the Ancient East.

*Paper IV.*—Constitutional History of England.

*Paper V.*—International Law.

*Papers VI and VII.*—Two papers in one of the following subjects to be selected by the candidate :—

- (i) The History of Islam.
- (ii) A special period of Indian History.
- (iii) Economic History of England and India.
- (iv) Comparative Politics.
- (v) A special period of European History, or such other special subjects as may, from time to time, be prescribed by the Syndicate.

*Paper VIII.*—Essay.

2. Books shall be recommended and periods selected by the Board of Studies concerned, to indicate the extent and standard of knowledge required.

Candidates are permitted to offer the following Alternative course in Ancient Indian History and Culture, but candidates who elect to do so must possess a competent knowledge of Sanskrit so as to be able to refer to the sources in original :

## COMPULSORY PAPERS.

1. General History of Vedic and Epic India.
- 2-3. Political History of the Post-Epic Period.
4. Historical Geography of Ancient India.

One of the following groups :—

- (i) *Archæology.*

A.

5-8. Epigraphy, Palæography and Numismatics.

B.

5-8. Fine Arts, Iconography and Ancient Architecture.

- (ii) *Social and Constitutional History.*

5. Social life, including manners, customs and ceremonies.
6. Economic life.
7. Administration.
8. Ethnology.

*(iii) Religious History.*

5. Vedic Religion.
6. Epic and Pauranik Religions.
7. Buddhism.
8. Jainism.

*(iv) Astronomy and Mathematics.*

5. Astronomy.
6. Astronomy.
7. Mathematics.
8. Mathematics.

*(v) Anthropology.*

(5) Physical Anthropology including origin and antiquity of man.

- (6) Social Anthropology.
- (7) Pre-historic Archæology and Technology.
- (8) Indian Ethnography.

In each Group, a subject for an essay shall be set in one of the Papers, which will carry half the value assigned to that Paper.

The Board of Higher Studies may from time to time vary the alternative groups.

## POLITICAL ECONOMY AND POLITICAL PHILOSOPHY.

1. There shall be two groups in this subject, the first four papers being common to both, namely:—

*For Groups A and B.*

*Papers I and II.*—General Economics.

*Paper III.*—General Principles of Political Philosophy.

*Paper IV.*—Public Administration.

*For Group A (Political Economy).*

*Paper V.*—General History of Economics.

*Papers VI and VII.*—Two papers on one of the following subjects:—

- (i) The History, Theory and Present Systems of Banking and Currency.
- (ii) The History, Theory and Present Organisation of International Trade.

- (iii) The Theory and Practice of Statistics, including Demography.
- (iv) The Mathematical principles of Political Economy or such other special subjects as may, from time to time, be prescribed by the Board of Studies concerned.

*Paper VIII.*—Essay.

*For Group B. (Political Philosophy.)*

*Paper V.*—General History of Political Philosophy.

*Papers VI and VII.*—Two papers on one of the following subjects :—

- (i) Comparative study of Political Institutions.
- (ii) Comparative study of Social Institutions.
- (iii) International Law with reference to existing Political and Economic Institutions.

*Paper VIII.*—Essay.

2. The limits of the subjects shall be defined and books shall be recommended from time to time by the Board of Studies concerned.

## COMMERCE.

1. The course shall include the following subjects :—

Realistic Economics.	Currency.
Business Organization.	Banking.
Inland and Foreign Trade.	Insurance.
Industrial structure and development.	Transport.
Accounting.	Tariffs.
Commercial Law.	Public Finance.
Economic History.	Statistics.
Economic Geography.	Mathematical Economics.
	Agricultural Economics.

Other subjects may be added to the above list from time to time by the Board of Higher Studies in Commerce.

2. One Paper shall be set in each subject unless the Board of Higher Studies otherwise determines.

3. Candidates shall be examined ordinarily in eight subjects; of these, not less than four and not more than six shall be compulsory subjects; the remaining subjects shall be left to the choice of the candidates.

The Board of Higher Studies in Commerce shall from time to time determine what subjects shall be deemed compulsory.

5. The limits of the subjects shall be defined and books shall be recommended from time to time by the Board of Higher Studies concerned so as to indicate generally the extent and standard of knowledge required.

6. This course will be open only to students who have taken Economics as a subject for the B.A. Examination, or have otherwise satisfied the Board that they possess a competent preliminary knowledge of that subject.

### ANTHROPOLOGY.

The course in Anthropology shall include both Physical and Cultural Anthropology. Physical Anthropology shall be studied from the zoological, palæontological, physiological, psychological and ethnological point of view. Cultural Anthropology shall be studied from the archaeological, technological, sociological, linguistic and ethnological point of view. The entire subject shall be treated with special reference to Indian conditions and problems past and present. Candidates shall be expected to possess a general knowledge of such subsidiary subjects as archæology, human anatomy, geography, psychology, zoology, physiology, statistics with special reference to biometrics, in so far as such acquaintance is necessary for the proper understanding of anthropology, but they shall not be required to pass a special examination in the subsidiary subjects.

Six theoretical papers of four hours each shall be set at the examination; there will also be an oral and practical examination extending over two days. Each written paper shall carry 100 marks; and 200 marks shall be allotted to the oral and practical examination. In order to pass, a candidate must obtain 216 marks in the aggregate of the written papers, and 72 marks in the oral and practical examination; but if in any written paper, a candidate obtains less than 25 marks, those marks shall not be included in his aggregate. Candidates obtaining 360 marks shall be placed in the Second Class and those obtaining 480 marks in the First Class.

Candidates may be permitted to substitute a piece of research work in lieu of written examination in two papers, provided they possess such qualifications, and fulfil such conditions as may, from time to time, be prescribed in this behalf by the Board of Higher Studies concerned.

Detailed syllabuses will be prescribed and books recommended from time to time by the Board of Higher Studies concerned, so as to indicate the extent and standard of knowledge required.

## GENERAL.

1. (a) In order to pass in subjects I to XIV-A a candidate must obtain 288 marks in the aggregate. No minimum pass marks shall be required in each paper, but if in any paper a candidate obtains less than 25 marks, those marks shall not be included in his aggregate. Candidates obtaining 360 marks shall be placed in the Second Class, and those obtaining 480 marks in the First Class.

(b) In order to pass in subject XV (Mathematics) a candidate must obtain 264 marks. No minimum pass marks shall be required in each paper, but if in any paper a candidate obtains less than 20 marks, those marks shall not be included in his aggregate. Candidates obtaining 320 marks shall be placed in the Second Class, and those obtaining 400 marks in the First Class.

(c) In order to pass in subjects XVI to XXIII a candidate must obtain 132 marks in the aggregate of the four theoretical papers, and 160 marks in the practical Examination. If in any theoretical paper a candidate obtains less than 25 marks those marks shall not be included in his aggregate. Candidates obtaining 360 marks shall be placed in the Second Class, and those obtaining 480 marks in the First Class.

2. As soon as possible after the Examination, the Syndicate shall publish a list of candidates who have passed in each subject, arranged in three classes and in order of merit. Candidates shall be bracketed together unless the Examiners are of opinion that there is clearly a difference in their merits.

Each successful candidate shall receive with his Degree of M.A. a certificate setting forth the subject in which he was examined, and the class in which he was placed.

3. The candidate who is placed first in the First Class in each branch shall receive a Gold Medal and a prize of books to the value of Rs. 200, and the candidate who is placed second in the First Class in each branch shall receive a Silver Medal and a prize of books to the value of Rs. 100.

## CHAPTER XXXIV.

## DOCTOR OF PHILOSOPHY.

1. Any Master of Arts of the University of Calcutta who has been placed in either the First or the Second Class at the examination for the Degree of Master, may offer himself as a

candidate for the Degree of Doctor of Philosophy provided three years have elapsed from the time when he passed the examination.

\* 2. Every candidate shall state in his application the special subject within the purview of the Regulations for the Degree of Master of Arts, upon a knowledge of which he rests his qualification for the Doctorate, and shall, with the application, transmit three copies, printed or type-written, of a thesis that he has composed upon some special portion of the subject so stated, embodying the result of research, or showing evidence of his own work, whether based on the discovery of new facts observed by himself, or of new relations of facts observed by others, whether constituting an exhaustive study and criticism of the published work of others, or otherwise forming a valuable contribution to the literature of the subject dealt with, or tending generally to the advancement of knowledge. The candidate shall indicate generally in a preface to his thesis and specially in notes, the sources from which his information is taken, the extent to which he has availed himself of the work of others, and the portions of the thesis which he claims as original; he shall further state whether his research has been conducted independently, under advice, or in co-operation with others, and in what respects his investigations appear to him to tend to the advancement of knowledge.

3. Every candidate may also forward with his application three printed copies of any original contribution or contributions to the advancement of the special subject professed by him, or of any cognate subject, which may have been published by him independently or conjointly, and upon which he relies in support of his candidature.

4. No application shall be entertained unless two Members of the Faculty of Arts, or two Doctors of Philosophy shall have testified, to the satisfaction of the Syndicate, that in habits and character the candidate is a fit and proper person for the Degree of Doctor.

5. Every candidate shall forward with his application a fee of Rs. 200. No candidate who fails to pass or present himself for examination shall be entitled to claim a refund of the fee.

6. The thesis mentioned in Regulation 2 and the original contribution, if any, mentioned in paragraph 3, shall be referred by the Syndicate to a Board of three examiners.

7. If the thesis is approved by the Board and if the candidate has obtained a first class at the examination for the Degree of Master of Arts, he shall not be required to submit to any further written examination; but he may be required by the Board, at their discretion, to appear before them to be tested

orally, or practically, or by both these methods, with reference to the thesis, and the special subject selected by him. The Board shall report to the Syndicate the result of the examination of the thesis, and of the oral and practical examinations, if any; and if the Syndicate, upon the report, consider the candidate worthy of the Degree of Doctor of Philosophy, they shall cause his name to be published, with the subject of his thesis, and the titles of his published contributions (if any) to the advancement of knowledge.

8. If the candidate is a person who has obtained a second class at the examination for the Degree of Master of Arts, and, if his thesis is approved by the Board, he shall be required to submit to a written examination.

Two papers of three hours each shall be set, one upon the special subject mentioned in the application of the candidate, and the other upon the subject of the thesis. The candidate may also be required by the Board, at their discretion, to appear before them to be tested orally or practically or by both these methods with reference to the thesis and the special subject professed by him. The Board shall report to the Syndicate the result of the examination of the thesis, and of the written examination and also of the oral and practical examinations, if any; and if the Syndicate, upon the report, consider the candidate worthy of the Degree of Doctor of Philosophy, they shall cause his name to be published, with the subject of his thesis, and the titles of the published contributions (if any) to the advancement of knowledge.

9. In the case of candidate falling under the preceding Regulation, if the Board upon an examination of his thesis and of his original contribution or contributions to the advancement of knowledge, hold the same to be generally or specially of such special excellence as to justify the exemption of the candidate from the written examination, he may be so exempted by the Syndicate, provided that the report of the Board shall set forth the fact and the grounds of such exemption.

10. A diploma under the seal of the University, and signed by the Vice-Chancellor, shall be delivered at the next Convocation for conferring Degrees to each candidate who has qualified for the Degree.

11. Every candidate shall be at liberty to publish his thesis, and the thesis of every successful candidate shall be published by the University with the inscription: "Thesis approved for the Degree of Doctor of Philosophy in the University of Calcutta."



## CHAPTER XXXIV A.

## BACHELOR OF COMMERCE.

1. The examination for the Degree of Bachelor of Commerce shall be held annually in Calcutta and such other places, as shall, from time to time, be appointed by the Syndicate, the approximate date to be notified in the Calendar.

2. Any person may be admitted to the Examination who has prosecuted a regular course of study in one or more colleges affiliated to the University for this purpose not less than two academical years after passing the Intermediate Examination.

3. A student not belonging to any affiliated college who has prosecuted a regular course of study under University Professors or University Lecturers, may, on the recommendation of the Syndicate, by special order of the Senate, be admitted to the examination as a non-collegiate University student, anything in Chapter XVI of the Regulations to the contrary notwithstanding.

4. Every candidate shall produce a certificate, (a) of good conduct and (b) of diligent study, and shall send in his application with a certificate in the form prescribed by the Syndicate to the Controller of Examinations in time so that it may reach his office at least six weeks before the date fixed for the Examination.

5. A fee of Rupees Forty-five shall be forwarded by each candidate along with his application. A candidate who fails to pass or to present himself for examination shall not be entitled to claim refund of the fee. A candidate who fails to pass may be admitted subsequently to one or more Degree Examinations in Commerce on payment of a like fee of Rupees Forty-five. Provided he produces a certificate of good conduct and diligent study for six months before the examination from the Head of an affiliated College or a University Professor or Lecturer in his subject or any other authority approved by the Syndicate.

6. The Degree Examination in Commerce will be conducted by means of printed papers, the same papers being used at every place where the Examination is held.

7. As soon as possible after the Examination, the Syndicate shall publish a list of the candidates who have passed, arranged in two divisions, the first in order of merit, and the other in alphabetical order. Every candidate on passing shall receive a certificate in the form prescribed.

8. Every candidate shall be examined in the following subjects:—

(1) Composition in an Indian Vernacular other than the

Vernacular of the candidate or French or German or Chinese or Japanese.

The Syndicate specified the following Vernacular languages:—Bengali, Hindi, Uriya, Assamese, Urdu, Burmese, Modern Armenian, Modern Tibetan, Khasi, Nepali, Telugu, Marathi, Gujrathi, Maithili, Tamil, Kanarese, Malayalam, Sinhalese. The Syndicate may add to the list.

- (2) General Economics.
- (3) Indian Economics.
- (4) Accountancy.
- (5) Economic Geography.
- (6) Business Organisation including Commercial Correspondence.
- (7) Inland or Foreign Trade.
- (8) Elementary Commercial Law.
- (9) One of the following subjects:
  - (i) Advanced Accountancy and Auditing.
  - (ii) Banking and Currency.
  - (iii) Industrial Organisation.
  - (iv) Agricultural Economics.
  - (v) Economics of Transport.
  - (vi) Public Administration.
  - (vii) Public Finance.
  - (viii) Statistics.
  - (ix) Tariffs.
  - (ix-a) Modern Economic History.
  - (x) Such other subject or subjects as may be prescribed by the Syndicate, from time to time, on the recommendation of the Board of Studies concerned.

9. One paper shall be set in each of the subjects (1)–(8) and two papers shall be set in the subjects chosen by the candidate from (9). Each paper shall be of three hours and shall carry 100 marks.

10. The limits of the subjects shall, from time to time, be defined by the Syndicate on the recommendation of the Board of Studies concerned.

11. In order to pass a candidate must obtain 30 per cent. of the marks in each paper and 40 per cent. of the marks in the aggregate. In order to be placed in the first division, he must obtain 60 per cent. of the marks in the aggregate.

## CHAPTER XXXV.

### INTERMEDIATE EXAMINATION IN SCIENCE.

1. The Intermediate Examination in Science shall be held annually in Calcutta and such other places as shall, from time

to time, be appointed by the Syndicate, the approximate date to be notified in the Calendar.

2. Any undergraduate of the University may be admitted to this examination, provided he has prosecuted a regular course of study in one or more Colleges affiliated for this purpose, for not less than two academical years after passing the Matriculation Examination.

Any student who has passed the Intermediate Examination in Arts may take up the course of the Intermediate Examination in Science at the second year's stage, and after one year's regular course of study appear at the examination. He will be excused attendance and examination in the subject or subjects in which he has already passed at the Intermediate Examination in Arts.

3. Every candidate sent up for the Intermediate Examination in Science by an affiliated College shall produce a certificate (a) of good conduct, (b) of diligent study, (c) of having satisfactorily passed the College Examinations and other tests, and (d) of probability of passing the examination. Every candidate for admission shall send in his application with a certificate in the form prescribed by the Syndicate either to the Registrar or to a local officer recognised by the Syndicate. Every such application must reach the office of the Registrar at least six weeks before the date fixed for the commencement of the examination.

4. A fee of rupees thirty shall be forwarded by each candidate with his application. A candidate who fails to pass or to present himself for examination shall not be entitled to claim a refund of the fee. A candidate who fails to pass may be admitted to any one or more subsequent Intermediate Examinations in Science on payment of a like fee of rupees thirty on each occasion, provided he produces a certificate from the Head of an affiliated College showing that he has prosecuted a regular course of study for one academical year since the date of the last examination, in each of the subjects in which he is to be examined.

5. The Intermediate Examination in Science shall be conducted by means of printed papers, the same papers being used at every place at which the examination is held.

6. As soon as possible after the examination, the Syndicate shall publish a list of the candidates who have passed, arranged in three divisions, the first in order of merit, and the second and third in alphabetical order. Every candidate shall on passing, receive a certificate in the form entered in Appendix A.

7. The subjects for the Intermediate Examination in Science shall be—

1. English                      ...                      ...                      *Three papers.*
2. One of the following vernacular languages:—Bengali,  
Hindi, Uriya, Assamese, Urdu, Burmese, Modern

Armenian, Modern Tibetan, Marathi, Khasi, Nepali (Parbatia), Maithili, Gujrathi, Telugu, Tamil, Kanarese, Malayalam, Sinhalese, Portuguese, Persian *One paper.*

The Syndicate shall have power to add to this list.

If the vernacular of a candidate is a language not included in the above list, he shall have an alternative paper of a somewhat advanced character in English.

3. Chemistry ... .. *Two papers.*

4. Mathematics or Physics (*Two papers in either subject*).

5. Any one of the following subjects:— *Two papers.*

(i) Mathematics, if not taken up as the 4th subject.

(ii) Physics, if not taken up as the 4th subject.

(iii) Botany.

(iv) Zoology.

(v) Geology.

(vi) Geography.

(vii) Physiology.

8. Candidates may also be examined, if they so desire, in an additional subject included under 5, provided they have not already taken the subject, or in French or German. In this optional subject there shall be two papers of three hours each.

9. No student shall be permitted to take up Mathematics for the B.Sc. Examination unless he has taken it up for the Intermediate Examination.

No student shall be permitted to take up Physics or Chemistry for the B.Sc. unless he has taken up both Mathematics and Physics for the Intermediate Examination.

10. Each paper shall be of three hours, and shall carry 100 marks.

11. No practical examination will be held by the University in connection with the science subjects in the Intermediate Examination in Science, but every student who desires to be examined in any such subject must produce a certificate from the Principal of his College to the effect that he has completed in an affiliated College the corresponding practical course prescribed by the Regulations.

12. The limits of the above subjects for both theoretical and practical work are defined below:—

ENGLISH, VERNACULARS, FRENCH, GERMAN.

As in the Intermediate Examination in Arts.

### MATHEMATICS.

#### 1. *Algebra.*

Theory of Quadratic equations and expressions.

Simultaneous Quadratic equations one of which is linear.

Permutations and Combinations.

Variation: proportion.

Binomial theorem.

Theory of Indices.

Surds and imaginary quantities.

Logarithms.

Exponential and Logarithmic Series.

Graphs of simple algebraic functions and of the exponential and logarithmic functions.

## 2. *Plane Trigonometry.*

Measurement of Angles.

Trigonometrical ratios.

Application of algebraic signs; angles of any magnitude.

Graphs of trigonometrical ratios.

Elementary trigonometrical formulæ and their applications.

Logarithmic Sines, Cosines, etc.

Relations between the sides and angles of a triangle.

Practical solutions of triangles with application.

## 3. *Geometry.*

### (a) *Parabola.*

Tracing the curves from the definition.

Latus rectum is four times the focal distance of the vertex.

$$PN^2 = 4 AS \cdot AN.$$

The middle points of parallel chords lie on a straight line parallel to the axis. The parameter of any diameter of a Parabola is four times the line joining the focus with the vertex of the diameter.

$$QV^2 = 4SB \cdot BV.$$

If any chord  $QQ'$  intersects the directrix in  $D$ ,  $SD$  bisects the exterior angle between  $SQ$  and  $SQ'$ .

The tangent to the curve at its points of intersection with a diameter is parallel to the system of chords bisected by the diameter.

The portion of the tangent at any point intercepted between that point and the directrix subtends a right angle at the focus.

The tangent bisects the angle between the focal distance and the perpendicular on the directrix.

The sub-tangent is bisected at the vertex.

The normal at any point makes equal angles with the focal distance and the axis.

The subnormal is equal to half the latus rectum.

### (b) *Ellipse.*

Tracing the curve from the definition.

The curve is symmetrical with regard to the minor axis and has a second focus and directrix.

$$CS. CX = CA^2.$$

$$SP + S'P = AA'.$$

$$CB^2 = SA. SA'.$$

If any chord  $QQ'$  of an ellipse intersects the directrix in  $D$ ,  $SD$  bisects the exterior angle between  $SQ$  and  $SQ'$ .

$$PN^2 : AN. A'N = CB^2 : CA^2.$$

The middle points of parallel chords lie on a straight line passing through the centre.

The tangent to the curves at either end of a diameter is parallel to the system of chords bisected by the diameter.

The portion of the tangent at any point intercepted between that point and the directrix subtends a right angle at the focus, and conversely.

The tangents at the ends of a focal chord intersect on the directrix.

The tangent at any point of an ellipse makes equal angles with the focal distances of the point.

#### (c) Solid Geometry.

One and only one plane may be made to pass through any two intersecting straight lines.

Two intersecting planes cut one another in a straight line and in no point outside it.

If a straight line is perpendicular to each of two intersecting straight lines at their point of intersection, it is also perpendicular to the plane in which they lie.

All straight lines drawn perpendicular to a given straight line at a given point are co-planar.

If two straight lines are parallel and if one of them is perpendicular to a plane, the other is also perpendicular to the same plane.

Of all straight lines drawn from an external point to a plane, the perpendicular is the shortest; of obliques drawn from the given point those which cut the plane at equal distance from the foot of the perpendicular are equal.

Straight lines in space which are parallel to a given straight line are parallel to one another.

The projection of a straight line on a plane is itself a straight line.

If a straight line outside a given plane is parallel to any straight line drawn on the plane, it is also parallel to the plane itself.

If a straight line is perpendicular to a plane, any plane passing through the perpendicular is also perpendicular to the given plane.

If two intersecting planes are each perpendicular to a third plane, their line of section is also perpendicular to that plane.

In a tri-hedral angle, the sum of any two of the face angles is greater than the third.

In a convex solid angle, the sum of the face angles is less than four right angles.

#### 4. *Elementary Statics and Dynamics.*

(a) Uniform and uniformly accelerated motion, composition and resolution of velocities, accelerations, etc.

Definition of mass, momentum, force.

Newton's laws of motion.

Units of force and measurement.

Composition and resolution of forces acting at a point.

Simple illustrations of Newton's laws; projectiles, motion of a particle on an inclined plane, motion of two particles connected by a string, uniform circular motion.

(b) Equilibrium of forces.

Resolution and composition of parallel forces in one plane.

Centre of parallel forces.

Centre of gravity. Mass centre.

Reduction of any system of co-planar forces acting on a rigid body to a single resultant force or couple.

Conditions of equilibrium for co-planar forces.

Friction.

Machines.

(c) Impulse of a force.

Conservation of linear momentum for a system of particles.

Simple cases of impact of two spherical bodies moving in the same plane.

Work and energy.

Application of the principle of energy to the solution of simple problems.

Two papers shall be set of three hours each, the first being allotted to Algebra, Plane Trigonometry and Geometry, and the second to Elementary Statics and Dynamics.

In all the subjects only such examples and questions may be introduced by way of illustration or explanation as arise directly out of the propositions themselves.

## PHYSICS.

### ELEMENTARY PHYSICS.

(a) General ideas—

Units of measurement and definitions of mass, force and motion.

Laws of motion.

Work and energy.

General properties of solids, liquids and gases.

Motions of translation and rotation.

Laws of pressure of liquids and gases, measurement of pressure.

Equilibrium of floating bodies.

Specific gravity.

Motion of pendulum.

(b) Heat—

Laws of expansion of solids, liquids and gases under heat.

Measurement of temperature.

Quantity of heat. Specific heat. Changes of molecular state, and latent heat of molecular changes of state.

Vapour-pressure; boiling point, dew point; formation of cloud, fog and dew.

Radiation, conduction and convection of heat.

The connection between heat and work.

Steam-engines.

(c) Light—

Laws of transmission of light, its intensity and velocity.

Shadows.

Photometry.

Reflexion of light at plane and spherical surfaces and the formation of images.

Refraction of light at plane and spherical surfaces and by prisms. Chromatic dispersion. Spectra.

Formation of images by single lenses.

The combination of two lenses to form (1) a simple telescope, (2) a compound microscope.

(d) Magnetism—

Properties of magnets.

Simple phenomena of magnetism and magnetic induction.

The magnetic field; lines of force. The Law of magnetic force.

The earth as a magnet.

(e) Frictional Electricity—

Electrical attractions and repulsions.

Properties of conductors and non-conductors.

Electrical induction.

The Law of electric force.

\* { Electrical field; strength of field.

\* { Potential; capacity.

Distribution of electrification on conductors.

Simple condensers. Leyden jars.

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\* Only elementary notions on these points will be required.



Electrophorus.

Frictional machines and Voss's machine.

Electric discharge.

(f) Dynamic Electricity—

Voltaic cell; electric current.

Magnetic effect of a current; simple galvanometers.

Primary batteries.

Electromotive force; difference of potential; resistance.

Ohm's law; volt; ohm; ampere.

Heating effects of currents.

Elementary phenomena of electrolysis.

Electromagnets.

Action of magnets on currents and of currents on currents.

Elementary phenomena of electro-magnetic induction.

(g) Sound—

The production and propagation of sound.

Reflection and refraction of sound.

Nature of wave motion.

Experimental determination of velocity of sound in air.

Musical sound and noise.

Relation between frequency and pitch; siren.

Vibration of strings, sonometer.

Vibration of air columns; organ pipes.

The Course in Physics shall be mainly experimental. Candidates will be expected to show general acquaintance with the apparatus by which the elementary principles of Physics are illustrated and applied.

*Practical Course.*

Length measurements by millimetre rule. Eye-estimation of tenths of a division.

Use of the vernier, linear and angular measurement of areas by plotting on squared paper.

Measurement of angles by protractors.

Verification of the laws of the inclined plane.

Verification of the laws of friction.

Determination of the centre of gravity of a plate.

Time of swinging of a simple pendulum. Verification of the formula  $t$  varies as  $l$ .

Use of the balance weighing to one centigramme.

Determination of specific gravities of solids and liquids by the hydrostatic balance.

Verification of Boyle's law.

Determination of fixed points of thermometers.

Simple methods of determining specific heat and latent heat of fusion.

Reading the barometric height.  
 Verification of the laws of reflexion and refraction.  
 Use of simple photometers.  
 Refractive index of glass plates.  
 Focal length of a concave mirror.  
 Focal length of convex lenses.  
 Production of a pure spectrum by means of a slit, lens and prism.  
 Verification of the simple laws of magnetism.  
 Determination of the poles of a bar magnet.  
 Tracing the lines of force in the neighbourhood of a magnet.  
 Verification of the simple laws of electrostatics.  
 Use of gold-leaf electrosopes.  
 Setting up common and voltaic cells.  
 Use of simple galvanometers.  
 Measurement of resistance by a simple form of Wheatstone's bridge.

## CHEMISTRY.

Gaseous, liquid and solid states of matter; effect of pressure and temperature on volumes of gases; chemical and physical changes; elements and compounds; common laboratory processes—mixtures, solution, crystallization, distillation, evaporation, precipitation, filtration, decantation, desiccation, combination by weight and volume, decomposition, combustion, oxidation, reduction, neutralization; terminology and nomenclature; symbols, formulæ, equations, calculation of formulæ from percentage composition, and calculations relating to weight and volume; laws of chemical combination and Dalton's atomic theory.

Study of the following substances:—hydrogen, oxygen, water, nitrogen, air, ammonia, nitric oxide, nitric peroxide, nitric acid, sulphur, sulphuretted hydrogen, sulphur dioxide, sulphuric acid, carbon, carbon monoxide, carbon dioxide, carbonic acid, marsh gas, chlorine, bromine, iodine, hydrochloric acid, hydrobromic acid, hydriodic acid, sodium, calcium, magnesium, zinc, iron, copper, mercury, and their oxides, hydroxides, chlorides, nitrates and sulphates.

### *Practical Course.*

Fitting up of simple apparatus, *e.g.*, a wash-bottle.  
 Performance of experiments involving Solution, Filtration, Distillation and Crystallization.  
 Determination of the Water of Crystallization of hydrated salts.  
 Preparation and study of the principal properties of Hydrogen and Oxygen.

Performance of experiments illustrating the Chemistry of Fire, Air and Water.

Performance of experiments involving Oxidation and Reduction. Simple Blowpipe analysis.

Determination of the equivalent of Zinc and Hydrogen.

Preparation and study of the principal properties of Sulphur Dioxide, Nitric Acid, Oxide, Nitrous Oxide, Ammonia, Carbon Dioxide, Hydrochloric Acid, Chlorine and Sulphuretted Hydrogen.

Simple qualitative detection of Mercury, Copper, Iron, Zinc, Calcium, Magnesium and Sodium from a solution containing not more than one of these metals.

Standardisation of a given Acid solution.

## BOTANY.

(a) Elementary General Morphology, including a study of the outline of the life-history of selected plants to illustrate the gradual ascent in complexity of structure and reproductive cycle from the lowest fungi and algæ to the phanerogams.

(b) The principles of classifications as illustrated by common plants; outlines of any one of the modern systems of classification. Referring plants to their natural orders.

(c) Elementary Histology—Structure and formation of cells. Union of cells into tissues; principal types of tissue; tissue systems. Structure and development of roots, leaves, and floral organs. Glands and glandular organs. Microchemical reaction of cellulose and its modifications, of starch, and of protoplasm.

(d) Elementary Plant Physiology, illustrated by simple experiments—Absorption of water; movement of water and gases within the plant; chemistry of the plant-body; food materials of plants, their sources and form; photo-synthesis; digestion, assimilation, transpiration; nutrition, metabolism; reserve materials. Growth; influence of external conditions on growth. Irritability. Reproduction, sexual and asexual.

## *Practical Course.*

Use of simple compound microscope. Dissection of flowers involving the use of a pocket lens, and needle and a pen-knife. Referring plants to the Natural Orders mentioned in the theoretical syllabus. Microscopic examination of chief plant tissues under simple conditions. Water-culture experiments; experiments on the functions of chlorophyll, its formation and decomposition; experiments on the relation between starch formation and external conditions. Experiments on root-pressure, on the flow of sap from injured parts, on the influence of external conditions on transpiration, on the mobility of water in wood, and on the absorption of mineral substances by the root.

Simple experiments on respiration. Movements of growth. Germination experiments.

The course shall include the drawing of parts of plants and of sections.

## PHYSIOLOGY.

General view of the Anatomy of the animal body :—

The human skeleton. The skull. The spine. The thorax. Shoulder girdle. The arm. The pelvic girdle. The leg. Joints, Ligaments and tendons.

The relations of the internal organs contained the cranial, thoracic and abdominal cavities, and a detailed knowledge of the structure of one limb considered as a mechanical appliance.

Histology of the following structures :—

Red and white blood-corpuscles; epithelium (squamous, ciliated and columnar); connective tissues including cartilage (hyaline, white-fibre and yellow elastic), bone, fibrous tissue; muscle; modulated nerve fibre and liver.

Chemical composition of the body. Proteid. Fat. Carbohydrate. Mineral salts.

Elementary Chemistry of blood, lymph and urine.

Chemical composition of food; the quantities and kinds of food required to balance the losses of the system.

The Phenomena of muscular contraction.

Circulation of the blood. The structure of the heart. The auricles and ventricles. The valves. The arteries and veins.

The beat of the heart. The heart-sounds. The flow of blood. The Pulse. The proof of circulation.

*Respiration.*—The structure of the lungs. The exchange of gases between blood and air, and blood and tissues. The cavity of the chest. The diaphragm. The mechanism of respiration.

The processes of digestion and absorption :—The teeth. The salivary glands. Saliva. The stomach. Gastric juice. Chyme. Pancreatic juice and bile. Vilus. The mesenteric vessels and portal vein. The lacteals and chyle.

*Excretion.*—The structure of the kidneys. The secretion of urine. The skin and sweat glands.

Production and regulation of animal heat.

General view of the Physiology of the brain and the spinal cord :—The structure of the brain. The cranial nerves. The spinal cord. Anterior and posterior roots. Excitability of a nerve. Reflex action,

Physiology of the organs of sense, and also of the organs of voice and speech:—Taste. Smell. Touch. The muscular sense. The structure of the Eye. The sense of sight. The ear and the sense of hearing. The mechanism of the larynx. The voice and speech.

*Practical Course.*

I. A general acquaintance with the following Physiological instruments:—

Simple Myograph. Hæmoglobinometer. Hæmocytometer. Ice-freezing Microtome.

II. Preparation and examination under the microscope of the following structures:—

Blood-corpuscles (mammalian and non-mammalian).

Epithelium (squamous, columnar and ciliated).

Striped muscle fibres, medullated nerve fibres.

Hyaline cartilage and bone.

The liver.

III.—Practical acquaintance with the chemical Physiology of Egg-albumen, Egg-globulin, Starch, Maltose and Milk.

ZOOLOGY.

The general Morphology and Physiology of the cell and of the simple tissues; cell division.

The general characters of the Protozoa. The shells of Foraminifera and of Radiolaria. The structure and life-history of the Infusoria.

The general characters of the Cœlenterata. The structure and life-history of a Hydra.

The general characters of the Echinodermata. The structure and life-history of Starfish.

The structure and life-history of a Leech.

The general characters of the Annelida. The structure and mode of life of an Earth-worm.

The general characters of the Arthropoda, and of their leading sub-divisions. The structure and life-history of a Crayfish and a Cockroach.

The general characters of the Mollusca and of their leading sub-divisions. The structure and life-history of a fresh water Mussel and a Snail.

The structure and mode of life of Amphioxus.

The structure of an Elasmobranch Fish, more specially the skeleton and the circulatory system.

The structure of the Bekti.

The structure and life-history of a Frog.

The structure and life-history of a Pigeon, more specially the skeleton.

The general characters of the Mammalia.

The structure of a Rabbit, more specially the skeleton and the digestive and circulatory systems.

### *Practical Course.*

I. The use of the compound microscope. A general acquaintance with the histology of the cell and the elementary tissues of the animal body.

II. Dissection of the circulatory, respiratory and alimentary systems of the Earth-worm, the Crayfish, the Frog, the Pigeon and the Rabbit; and also a practical study of the general anatomy of the nervous system of these types.

## GEOLOGY.

The objects of Geology and the distinctions between Dynamical, Structural and Stratigraphical Geology, Petrology, Mineralogy and Palæontology.

The general relations of the lithosphere, hydrosphere and atmosphere. The distinction between crust and nucleus. Evidences of internal heat.

General physical characters of the continental plateaux and oceanic depressions. Physical characters of the continents, the chief mountain ranges and river systems.

Composition of the Earth's crust. Definition of a mineral. Methods of examining minerals for physical and chemical characters; specific gravity; hardness; fracture; colour; tarnish-lucency. Characters of crystals; lustre; geometrical relations of the systems of the crystals and their grades of symmetry; chemical and crystallographic isomorphism, pseudomorphism; twinning. The principal physical properties and chemical compositions of the following minerals:—Native gold, silver, copper, mercury, platinum, arsenic, antimony, bismuth and sulphur; diamond, graphite; halite, fluor-spar, galena, blende, cinnabar; pyrite, chalcopryrite, orpiment; corundum, hæmatite cassiterite; rutile, quartz, chalcedony, opal, spinel, magnetite, chromite, borax; calcite, dolomite, magnesite, siderite, malachite; olivine, the pyroxene and amphibole group, talc, topaz, tourmaline,

kaolin, the felspars, micas, garnets, zircon; nitre; apatite; barytes, anhydrite, gypsum, alungen, alum, melanterite.

Definition of a rock. Distinction between igneous, aqueous and metamorphic rocks. Classification of igneous rock, (a) according to origin, (b) according to chemical composition. General differences between the structural characters of plutonic and volcanic rocks. Characters of dyke-rocks. Nature of the chief structures of rocks; granitic, granulitic, porphyritic, poikilitic, diabasic, miarolitic, felsitic, vitreous. Description of granites, syenites, diorites, gabbros, peridotites, felsites, rhyolites, trachytes, andesites, dolerites, basalts, obsidian, pumice, tachylyte, volcanic tuffs and ashes. Classification of aqueous rocks and description of the characters and modes of occurrence of the following:—shale, sandstone, conglomerate, ooze, chalk, limestone, peat, lignite, coal, tufas or travertine, oolite, flint and chert sinter, laterite.

Metamorphic rock:—gneisses, schists, slates, marbles, quartzites.

Composition of the atmosphere. Chemical and mechanical action of atmospheric agents on rocks. The formation of soils and laterite. The geological action of underground water; the formation of caverns, and stalactites; origin of springs. The nature and work of glaciers. The destructive and reproductive work of rivers; canons, deltas; river terraces. Origin of landslips. The formation and destruction of freshwater lakes. The origin and nature of salt-lakes.

Composition of the ocean. Nature of the principal marine deposits and the conditions under which they are formed. The formation of coral-reefs. Raised beaches.

Volcanic phenomena and products; distribution of volcanoes, geysers. Earthquakes; definition of seismic focus, epicentre; isoseismal lines. Secular upheaval and depression.

Origin of stratification; the consolidation of strata. The preservation of surface markings on strata. False bedding. Disturbance of horizontality by earth-movements; dip, strike and outcrop; various forms of folds; anticlinal and synclinal folds. Normal and reversed faults; hade, throw; thrustplanes. Unconformity. Cleavage of rocks. Joints Modes of occurrence of igneous rocks; bosses, dykes, contemporaneous lava-flow, intrusive sheets, volcanic ash-beds, volcanic necks.

Conditions under which organic remains are preserved. Definition of a fossil. The value of fossils in forming a chronological classification of strata. The equivalence of isolated systems of strata. The subdivisions of geological time. The chief features of the Archæan group. The leading palæontological differences between the Palæozoic, Mesozoic and Cainozoic groups. The order of stratigraphical systems in the European standard,

stratigraphical scale. The division of post-Archæan strata in India into Purana, Dravidian and Aryan groups. Description of the following systems and series; Dharwar, Bijawar, Cuddapah, Kurnool, Vindhyan; the Cambrian, Products Limestone, and Triassic formations of the Salt Range; the Chief occurrences of marine Jurassic strata; the Gondwanas; the Cretaceous formation of South India; the Lower Tertiary formations; the Siwalik series. The Indo-Gangetic alluvial deposits.

### *Practical Course.*

Determination of the hardness and specific gravity of a mineral specimen. The recognition of hand specimens of the minerals and rocks mentioned in the syllabus. The use of the contact goniometer. The determination of dip and strike. The drawing of sections from geological maps. The recognition of specimens illustrating the following classes and orders of fossils:—Foraminifera, Radiolaria, Sponges, Corals, Graptolites, Echinoderms, Bryozoa, Brachiopoda, Pelecypoda, Gastropoda, Cephalopoda, Trilobites.

## GEOGRAPHY.

The regional geography of the World, with a more detailed treatment of India, Southern and South-Eastern Asia and Japan, Britain and the countries of Western Europe, and the United States of America.

In addition to the Matriculation Course the following:—

The movements of the Earth and their consequences. The commoner methods of map projection. Methods of representing relief. Contour lines and sections.

The general circulation of the atmosphere; disturbing factors, form and elevation of the land surface, and the unequal heating of sea and land. Distribution of rainfall and aridity, of permanent, seasonal and variable winds, of land and sea climate. Cyclonic and anticyclonic movements of the air and their relation to humidity and rainfall.

The general relief of the ocean floor, and the deposits upon it. Ocean currents in relation to climate and commerce. The causes of the tides, and their effect upon the situation and commercial importance of ports.

Land forms: their classification and origin. Crustal movement. Volcanic action. Weathering and erosion. Results of glacial action. The work of rivers.

The general distribution of Flora and Fauna, with special reference to environment and uses: climatic zones.



The general distribution of minerals, and their accompanying or dependent industries.

Man and his markets, with special reference to the British Empire.

The distribution of the human race; formation and expansion of Nationalities.

The treatment of the regions named for special attention shall have reference to the characteristic, physical and climatic features, natural resources, industries, trade, distribution of population, the principal towns and internal lines of communication, the people in regard to race, language and national development.

A more advanced knowledge of general principles shall be required than in the Matriculation Examination.

### *Practical Course.*

Elementary Cartography. Drawing Plans and Maps, including examples from the student's immediate surroundings. Drawing statistical diagrams on squared paper. Modelling in sand and clay. Mercator's Projection. Orientation and elementary determination of latitude. Simple meteorological observations; temperature, pressure, humidity (wet and dry bulb thermometers). Wind direction, clouds and rainfall. Study of Meteorological Charts.

### GENERAL.

1. In order to pass the Intermediate Examination in Science a candidate must obtain—

In English ... .. 108 marks.

In the Vernacular or the alternative paper ... 36 „

In each of the remaining compulsory subjects taken up. 60 marks.

And in the aggregate of the compulsory subjects 340 marks.

2. In order to be placed in the first division a candidate must obtain 500 marks.

In order to be placed in the second division 400 marks.

If a candidate has passed in the compulsory subjects and in the aggregate, the marks in excess of 60 obtained by him in the optional subject, if any, shall be added to his aggregate, and the aggregate so obtained shall determine his division and his place in the list.

3. Any candidate who has failed in one subject only, and by not more than 5 per cent. of the full marks in that subject, and

has shown merit by gaining 50 per cent. or more in the aggregate of the marks of the examination, shall be allowed to pass.

4. If the Moderators are of opinion that in the case of any candidate not covered by the preceding Regulation, consideration ought to be allowed by reason of his high proficiency in a particular subject, or in the aggregate, they shall report the case to the Syndicate, and the Syndicate may pass such candidate.

5. Candidates who after passing the Intermediate Examination in Arts, appear for the Intermediate Examination in Science, shall be required, in order to pass, to obtain 36 per cent. in each subject for which they present themselves in the latter examination.

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## CHAPTER XXXVI.

### BACHELOR OF SCIENCE.

1. An examination for the Degree of Bachelor of Science shall be held annually in Calcutta, and such other places as shall from time to time be appointed by the Syndicate, and shall commence at such time as the Syndicate shall determine, the approximate date to be notified in the Calendar.

2. Any undergraduate of the University may be admitted to the examination, provided he has prosecuted a regular course of study, for not less than two academical years after passing the Intermediate Examination in Science, in one or more Colleges affiliated to the University in the subjects which the candidate takes up.

3. Every candidate sent up for the B Sc. Examination by an affiliated College shall produce a certificate (a) of good conduct, (b) of diligent study, (c) of having satisfactorily passed the College periodical examinations and other tests, and (d) of probability of passing the examination. Every candidate shall send in his application with a certificate in the form prescribed by the Syndicate to the Registrar at least six weeks before the date fixed for the commencement of the examination. If he desires to be examined for Honours in any subject he shall name the subject in his application. If a candidate offers Experimental Psychology he shall be required to give the Registrar notice of the fact twelve months before the date of the examination.

4. A fee of Rs. 45 shall be forwarded by each candidate with his application, provided that a candidate who applies for admission to the Honours Examination shall pay an additional fee of Rs. 10.

A candidate who fails to pass or to present himself for examination, shall not be entitled to claim a refund of the fee. A candidate who fails to pass may be admitted to one or more subsequent examinations for the Degree of Bachelor of Science on payment of a like fee of Rs. 45 or 55 as the case may be on each occasion, provided he produces a certificate from the Head of an affiliated College, shewing that he has prosecuted a regular course of study for one academical year since the date of the last examination, in each of the subjects in which he is to be examined.

5. The examination for the Degree of Bachelor of Science shall be conducted by means printed papers, the same papers being used at every place at which the examination is held.

6. Every candidate shall be examined in three of the following subjects selected by himself:—

- (I) Mathematics
- (II) Physics.
- (III) Chemistry.
- (IV) Botany.
- (V) Geology.
- (VI) Zoology.
- (VII) Physiology.
- (VIII) Experimental Psychology.
- (IX) Anthropology.

7. No student shall be permitted to take Mathematics for the B.Sc. Examination unless he has taken it up for his Intermediate Examination.

No student shall be permitted to take up Physics or Chemistry for the B.Sc. Examination unless he has taken up both Mathematics and Physics for the Intermediate Examination.

8. A candidate may take up the Pass Course in three subjects, or the Pass Course in two subjects and the Honours Course in one subject. In the Pass Course, in any subject except Mathematics, there shall be two theoretical papers and one paper in practical work. In the Honours Examination in any subject except Mathematics there shall be four theoretical and two practical papers. In Pass Mathematics, there shall be three theoretical papers. In Honours Mathematics, there shall be six theoretical papers.

9. As soon as possible after the examination, the Syndicate shall publish a list of the candidates who have passed in the Pass Course, arranged in alphabetical order together with a list of those who have obtained Honours in each branch, arranged in two classes, both in order of merit. Each successful candi-

date shall receive with his Degree of B.Sc. a certificate in the form entered in Appendix A.

10. The limits of the above subjects for both theoretical and practical work are defined below.

### MATHEMATICS.

The papers in Mathematics shall be distributed as follows:—

#### PASS COURSE.

##### *Paper I.*

##### 1. *Higher Plane Trigonometry*

Submultiple angles.

Properties of triangles.

General values of angles which have the same sine, cosine, etc.

Inverse circular functions

Summation of series.

De Moivre's theorem.

Exponential values of sine and cosine.

Expansion of  $\sin \theta$  and  $\cos \theta$  in powers of  $\theta$ .

##### 2. *Plane Analytical Geometry.*

Co-ordinates, cartesian and polar.

Transformation of co-ordinates; change of axes.

The straight line; equations representing a pair of straight lines.

The circle.

The parabola.

The ellipse.

The hyperbola.

##### *Paper II.*

##### 3. *Differential Calculus.*

Variables and constants.

Functions; the graph of a function.

Limits; differentiation, Infinitesimals, differentials, successive differentiation, Taylor's and Maclaurin's theorems.

Maxima and minima.

Differentiation of a function of several variables; partial differentiation.

Simple geometrical and physical applications.

#### 4. *Integral Calculus and Differential Equations.*

Integration, summation.

Elementary integrals.

Integration by parts.

Partial fractions.

Integration of irrational and trigonometrical functions.

Differential equations of the first order involving two variables.

Linear equations with constant co-efficients.

Simple geometrical and physical applications.

#### *Paper III.*

##### 5. *Hydrostatics.*

Nature and properties of fluid pressure.

Density and specific gravity of a homogeneous mixture.

Determination of the pressure of a heavy liquid in simple cases.

Centre of pressure.

Conditions of equilibrium and stability of equilibrium for a floating body.

Properties of elastic fluids and determination of pressure.

Measurement of heights by the barometer.

Determination of specific gravities.

Mixture of gases.

Descriptions of the barometer, air-pump, common and force pumps, the diving bell, the baloon, siphon, and Brahmah's press as applications of hydrostatical principles.

##### 6. *Astronomy.*

The subject is to be treated mathematically but without the use of spherical trigonometry.

The Earth.

Transit instrument, meridian circle, equatorial and micrometer.

Atmospheric refraction.

The sun and the solar system,

Parallax.

Determination of the first point of Aries.

Precession, nutation, aberration.

The moon.

Lunar and solar eclipses.

Measurement of time.

Determination of latitude and longitude by simple methods.

The fixed stars.

### HONOURS COURSE.

#### *Paper I.*

##### 1. *Higher Algebra.*

Binomial theorem.

Convergence and divergence of series.

Inequalities.

Simple continued fractions.

Summation of series.

Determinants.

##### 2. *Elementary Theory of Equations.*

General Properties of equations.

Relation between roots and co-efficients of equations.

Transformation of equations.

Algebraic solution of cubic and biquadratic equations.

Limits of the roots of equations.

Solution of numerical equations.

#### *Paper II.*

##### 3. *Higher Plane Trigonometry.*

In addition to a fuller treatment of the Pass Course, the following:—

Expansion of  $\sin \theta$ ,  $\cos \theta$ ,  $\sin n\theta$ ,  $\cos n\theta$ , Hyperbolic functions.

Expansion of series.

Resolution of circular and hyperbolic function into factors.

##### 4. *Plane Analytical Geometry.*

In addition to a fuller treatment of the Pass Course, the general equation of the second degree in Cartesian co-ordinates,

*Paper III.*5. *Elementary Solid Geometry.*

Cartesian and polar co-ordinates.

The straight line and plane.

The sphere.

The cone and cylinder.

The ellipsoid.

The hyperboloids.

The paraboloids.

Generating lines and sections of quadrics, conjugate diameters.

Diametral planes and principal planes.

Curvature of surfaces. Meunier's theorem.

6. *Elementary Principles of Vectors.*

Fundamental notions.

Addition, subtraction, multiplication and division of vectors.

Simple physical applications.

*Paper IV.*7. *Differential Calculus.*

In addition to a fuller treatment of the Pass Course, an increased number of geometrical, physical and analytical applications.

8. *Integral Calculus and Differential Equations.*

In addition to a fuller treatment of the Pass Course:—

Formulae of reduction.

Simple cases of definite integrals.

Graphical methods.

Fourier's series.

Differential equations of the first and second orders involving two variables only.

*Paper V.*9. *Statics.*

Composition and Resolution of forces.

General conditions of equilibrium of a particle under the action of co-planar forces.

Equilibrium of a particle on plane curves.

Composition and resolution of co-planar forces acting on a rigid body.

Principle of virtual work.

Simple machines.

Friction.

Centroids and centres of mass.

Simple cases of equilibrium of flexible inextensible strings.

*10. Dynamics of a particle.*

Velocity, acceleration.

Laws of motion.

Rectilinear, parabolic, circular, and harmonic motion.

Impact.

Work and energy.

Central orbits.

*Paper VI.**11. Hydrostatics.*

The subjects of the Pass Course treated more fully.

*12. Astronomy.*

The subjects of the Pass Course treated more fully.

## PHYSICS.

The papers in Physics shall be distributed as follows:—

## PASS COURSE (THEORETICAL).

*Paper I.**(a) General ideas.—**1. Wave motion:*

Simple harmonic motions.

Combination of wave motions.

Resolution of complex wave motions into simple harmonic wave motions.

*2. Potential:*

Definition of potential.

Calculation of potential in simple cases.

Determination of force from potential.

Fundamental propositions respecting lines of force, equipotential surfaces and tubes of force.

*3. General properties of matter:*

Elasticity. Young's modulus; simple elasticity treated experimentally.

Friction.

Viscosity of liquids and gases.

Surface tension.

Capillarity.

*(b) Heat.*—A more thorough acquaintance with the parts of the subject prescribed for the Intermediate Examination in Science and a greater power of working problems on Heat will be expected from the candidates.

*(c) Light.*—Besides a more thorough acquaintance with the parts of the subject prescribed for the Intermediate Examination



in Science, a knowledge of the following will be expected from the candidates :—

Optical description of the eye.

Optical instruments : sextants, lenses, microscopes, telescope, spectrometers.

Achromatic Combinations.

Elements of the wave theory of Light.

Simple cases of interference, double refraction, and polarisation.

### *Paper II.*

(d) *Sound*.—Besides a fuller treatment of the parts of the subject prescribed for the Intermediate Examination in Science the following :—

Measurement of frequency and wave-lengths of sound vibrations.

Doppler's principle.

Resonance.

Interference of sound waves. Beats.

Harmonic tones, their generation and function.

Longitudinal vibration of rods.

Vibration of plates.

Vibration of tuning forks and bells.

Nature of musical sounds.

Vocal organs of man.

(e) *Frictional electricity*.—

This subject treated more immediately in connection with potential, with the addition of the following parts :—

Theory of electric condenser of simple geometrical form.

Specific inductive capacity and its measurement. Electrometer.

Electrostatic units.

(f) *Dynamic electricity*.

Besides a fuller treatment of the parts of the subject prescribed for the Intermediate Examination in Science, the following :—

Galvanometers.

Measurement of electric force, conductivity, resistance and current.

Electro-magnetic units and their relation to electrostatic units.

Effect of temperature on electric resistance.

Electrolysis. Theory of voltaic and electrolytic cells.

Thermo-electricity including Peltier and Thomson effects.

*(g) Magnetism.—*

Besides a fuller treatment of the parts of the subject prescribed for the Intermediate Examination in Science, the following:—

Magnetic moments and methods of comparing them.

Determination of declination, dip and intensity of the magnetic force of the earth.

Methods of magnetisation.

Magnetic potential.

Magnetic properties of iron and steel. Permeability.

Hysteresis. Diamagnetism.

The subjects are to be treated mathematically as well as experimentally, as far as the Mathematics of the Intermediate Course are applicable.

## PASS COURSE (PRACTICAL).

Use of  $\left\{ \begin{array}{l} \text{Callipers.} \\ \text{Screw-gauge.} \\ \text{Spherometer.} \end{array} \right.$

✓ Use of the balance.

Reading and correcting the barometer.

✓ Determination of specific gravities.

✓ Determination of the modulus of elasticity of a given wire by stretching.

✓ Determination of the intensity of gravity by the pendulum.

Measurement of the linear co-efficient of linear expansion of metals.

✓ Measurement of the co-efficient of increase of pressure of a gas.

✓ Measurement of the co-efficient of expansion of air at constant pressure

Determination of the laws of cooling.

✓ Determination of the specific heat of solids and liquids.

Determination of the latent heat of water and steam.

Determination of the dew-point.

Determination of the velocity of sound by resonance columns.

Use of the sonometer.

✓ Determination of the focal length of lenses and concave mirrors.

Photometric measurements.

Determination of the magnifying power of combinations of lenses.

Adjustment and use of the spectroscope and the spectrometer.

Comparison of magnetic moments.

Distribution of magnetism along a magnet.

Determination of the axis of a magnetised body.

Measurement of magnetic dip with corrections.

Determination of the constant of a tangent galvanometer.

Measurement of the resistance of wires.

Comparison of electromotive forces.

The Laboratory note books of candidates shall be inspected and marked by Examiners, and if they are found to be unsatisfactory the candidates will be disqualified. Note books which have not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

#### HONOURS COURSE (THEORETICAL).

Candidates will be expected to know the notation and elementary principles of the differential and integral calculus.

In addition to the subjects of the Pass Course, the following:—

(a) *Heat*—

The elementary principles of thermo-dynamics.

(b) *Geometrical optics*—

Spherical aberration.

Dispersion.

Prismatic analysis of light.

Explanation of lines in the solar and other spectra.

(c) *Physical optics*—

Interference of light.

Refraction of light.

Measurement of wave-length. Colour of thin plates. Double refraction.

Polarisation of light by reflection, refraction and double refraction.

Interference of polarised light as shown by double refracting crystals.

Polariscopes and Polarimeters.

Elliptic and circular polarisation.

Rotation of the plane of polarisation.

#### HONOURS COURSE (PRACTICAL).

In addition to the Pass Course, the following:—

Use of the balance with corrections for displacement of air.

Calibration of tubes.

Determination of Young's modulus of a given rod by bending.

Experimental determination of moments and inertia.

Measurements of surface tension by means of capillary tubes.

Determination of the co-efficient of expansion of liquids.

Determination of the specific heat of liquids by the method of cooling.

Determination of vapour pressure.

Determination of vapour density.

Determination of frequency by a siren.

Determination of the velocity of sound in rods by Kundt's tube.

Determination of the refractive indices of solids and liquids.

Mapping of spectra.

Measurement of lengths by gratings.

Measurement of magnetic moment and Earth's horizontal force.

Verification of galvanometer by electrolytic experiments.

Measurement of heat developed by current.

The Laboratory note-books of candidates shall be inspected and marked by Examiners, and if they are found to be unsatisfactory, the candidates will be disqualified. Note-books which have not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

The papers in the Honours course shall be distributed as follows:—

*Paper I.*—General Ideas and Sound.

*Paper II.*—Heat.

*Paper III.*—Light.

*Paper IV.*—Electricity and Magnetism.

*Paper V.* } --Practical examination.

*Paper VI.* }

## CHEMISTRY.

### PASS COURSE.

*Theoretical.*—Essential features of chemical and physical change; chemical notation and nomenclature; interpretation of chemical formulæ; classification and mutual relations of the elements; laws of chemical combination by weight and volume; atomic theory; Avogadro's hypothesis and its application; valency; Compound radicals; conditions of chemical change and the thermal changes accompanying it; laws of electrolysis, methods of determination of equivalent, atomic and molecular weights; diffusion of gases; dialysis; acids, bases and salts; basicity of acids and acidity of bases; allotropy; dissociation; isomerism; polymerism; homology.

Preparation and properties of the following elements and their chief compounds:—Oxygen, hydrogen, nitrogen, argon, fluorine, chlorine, bromine, iodine, sulphur, boron, carbon,

silicon, phosphorus, arsenic, sodium, potassium, ammonium, calcium, strontium, barium, magnesium, zinc, cadmium, mercury, copper, silver, gold, aluminium, manganese, iron, tin, lead, antimony, bismuth; and the following compounds of carbon:—methane and ethane with their simple derivatives, namely, haloid derivatives, aldehydes, alcohols, monobasic acids, ethers, esters, ketones, acetic chloride, acetic anhydride, and acetamid; oxalic, tartaric and citric acids; cane sugar, invert sugar and starch; ethylamine, cyanogen, hydrocyanic acid, potassium ferro and ferri-cyanides, urea; benzene, mono-chlorbenzene, mono-nitrobenzene, anilin, phenol, toluene, benzyl, alcohol, benzaldehyde and benzoic acid.

*Practical.*—Preparation, and performance of experiments illustrating the properties of—oxygen, hydrogen, chlorine, sulphur dioxide, sulphuretted hydrogen; hydrochloric, nitric, carbonic and oxalic acids; ammonia and caustic soda; oxides, hydroxides, chlorides, sulphides, sulphates and nitrates of calcium; magnesium, iron, copper, mercury and lead.

A thorough practical acquaintance with methods of blowpipe analysis and dry tests.

Easy qualitative analysis of inorganic substances or mixtures containing not more than two salt radicals, positive or negative, that occur in the theoretical course.

Experimental examination of the following organic substances given single:—methyl alcohol; ethyl alcohol; glycerine, formic, acetic, oxalic, tartaric and citric acids; urea; benzene and benzoic acid.

Volumetric estimation of alkalies, alkaline carbonates and acids. Gravimetric estimation of crystallized copper sulphate or any similar substance. Simple determinations of Chemical Equivalent.

About one-third of the questions should be from Organic and two-thirds from Inorganic Chemistry.

The Laboratory note-books of candidates shall be inspected and marked by Examiners, and if they are found to be unsatisfactory, the candidates will be disqualified. Note-books which have not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

### HONOURS COURSE.

In addition to a fuller treatment of subjects for the Pass Course, the following:—

#### *Inorganic Chemistry (Theoretical).*

Influence of solutes on freezing and boiling points of solvents; ionic and hydrate theories of solutions; osmosis and laws of osmotic pressure; dialysis.

Study of the following elements and their principal compounds: Selenium, Tellurium, Lithium, Cæsium, Rubidium, Chromium, Nickel, Cobalt, Platinum, Helium and Radium.

*Organic Chemistry (Theoretical).*

Azo and diazo-compounds; phenyl hydrazins; dioxybenzene and quinone; salicylic, toluic and phthalic acids; naphthalene and anthracene.

*Inorganic Chemistry (Practical).*

The mixtures for qualitative analysis may include not more than four salt radicles, positive or negative, from the following list:—Silver, lead, mercury, copper, bismuth, cadmium, tin, arsenic, antimony, iron, manganese, aluminium, chromium, zinc, cobalt, nickel, calcium, strontium, barium, magnesium, potassium, sodium, ammonium, oxides, hydroxides, chlorides, bromides, iodides, sulphides, sulphites, sulphates, chromates, carbonates, phosphates, nitrates, and nitrites.

A more complete knowledge of volumetric and gravimetric analysis.

*Organic Chemistry (Practical).*

The mixtures for qualitative analysis may include not more than two of the substances from the following list:—Hydrocyanic acid, formic acid, benzoic acid, oxalic acid, acetic acid, tartaric acid, citric acid, salicylic acid, cane sugar, glucose, starch, methyl and ethyl alcohols, glycerine, benzene, aniline, phenol and urea.

Questions may also be set on quantitative estimation of nitrogen, carbon and hydrogen in organic bodies; estimation of molecular weight of organic acids; determination of vapour density by Victor Meyer's method.

The Laboratory note-books of candidates shall be inspected and marked by Examiners, and if they are found to be unsatisfactory, the candidates will be disqualified. Note-books which have not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

**BOTANY.**

**PASS COURSE.**

**I.—General Morphology of—**

- (a) Phanerogams—including a study of the following subjects in detail—Branch systems; phyllotaxis origin of members. General Morphology should be studied with reference to æcological principles.

## (b) Cryptogams.

- II. Histology:—cell-contents and their microchemical reactions. Structure and development of cells and tissues.
- III. Physiology, including the following subjects—treated experimentally:—Absorption of water: movement of water and gases within the plant; chemistry of the plant-body; food materials of plants, their sources and form; photosynthesis; digestion, assimilation, transpiration; nutrition, metabolism; reserve-materials. Growth. Movement of protoplasm. Action of gravity, heat, light, and electricity. Some facts connected with symbiosis and carnivorous plants. Mechanical movements (hygroscopic movements; dehiscence of fruit; mechanical ejection of seeds). Autonomous movements (nutations, sleep). Movements due to irritability (mechanical, chemical and physical irritants; twinning). Geotropism, Heliotropism, Transport of food-stuffs and of the products of photosynthesis. Asexual and sexual propagation of plants.
- IV. The study of the life-history of the following:—Yeast, *Chroococcus*, a *Desmid*, *Mucor*, *Chara*, *Spirogyra*, *Ulothrix*, *Volvox*, *Peronospora*, a Moss, *Marchantia*, a Fern, *Lycopodium* and *Sellaginella*, *Equisetum*, *Cycas*, a Conifer, a Monocotyledon, and a Dicotyledon.
- V. The principles of classification as illustrated by common plants: outlines of the chief modern systems of classification. Identification of plants by analytical tables. Referring plants to their natural orders.
- VI. A knowledge of the systematic position, morphological characters, use and cultivation of some of the more important economical plants (rice and other cereals, pulses, vegetables, fruit-trees, sugar-producing plants, tea, the fan-palm, the bamboo, a few important timber trees, indigo, jute, cotton).

*Practical Course.*

1. The making, staining and description of microscopical sections of plants.
2. Referring commonly occurring plants to their Natural Orders.
3. Identification of plants by analytical tables.

4. Drawings of dissections of flowers and of 'microscopical sections.

5. Physiological experiments:—

Water-culture experiments; experiments on the functions of chlorophyll, its formation and decomposition; experiments on the relation between starch formation and external conditions. Experiments on root pressure, on the flow of sap from injured parts on the influence of external conditions of transpiration, on the mobility of water in wood, and on the absorption of mineral substances by the root. Simple experiments on respiration. Movements of growth. Germination experiments.

The Laboratory note-books of candidates shall be inspected and marked by Examiners, and if they are found to be unsatisfactory the candidates will be disqualified. Note-books which have not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

#### HONOURS COURSE.

The same as the Pass Course with the following additions:—

- (a) A more extensive knowledge of the characterization and classification of tissue-systems from the anatomical-physiological point of view.
- (b) Experiments on the food of plants—organic food-stuffs; the mycorrhiza in relation to humus; experiments with penicillium, saccharomyces, parasitic fungi, and nitrogen-bacteria. Experiments on osmosis and plasmolysis. Vriess's Law considered in the light of the modern theory of solutions. Experiments on the metabolic processes in plants. A more detailed account of the sexual propagation of Thallophyta, Archegoniatae, and Siphonogamæ with additional examples to those already mentioned in the Intermediate Course. The decay of plants; humus; Putrefaction bacteria, Ferments.
- (c) Historical Botany. A short sketch of the occurrence of plants in former geological periods. A few of the more important type fossils of the Bengal coal-fields. A concise account of the theory of evolution.
- (d) Botanical Ecology treated with special reference to Indian conditions:—Water: characteristic features of hygrophytes, tropophytes, xerophytes, and hydrophytes; hygrometric influences on sexual reproduction; dispersal of seeds by water. Heat: Zeropoints of plant-life; Cardinal Points of plant-functions;



acclimatization. Light; influence of intensity and quality. Air: atmospheric and dissolved oxygen; effects of barometric pressure and of wind. Soil: physical and chemical properties; effects produced by sodium chloride, reh, and calcium carbonate. Animals: cross fertilisation; ornithophilous and entomophilous plants. Relation of ants to plants. Formations: climatic; edaphic; their characteristics.

(e) Geographical Botany, with special reference to the tropical zones and Geographical regions of India.

(f) Practical course:—

A. Collection and preservation of specimens. Exercises in the dissection and identification of dried plants. Identification of species belonging to the more difficult orders (*e.g.*, Umbelliferae, Amaranthaceae, Piperaceae, Orchidaceae, Tacopy Graminaceae).

B. Microscopical examination and a more detailed practical study of any one of the following groups, their special morphology and mode of propagation:—

I. Algæ: Conjugatæ.

II. Fungi: one of the following—Saprolegniæ, Peronosporinæ, Mucorinæ, Pezizinæ, Uridinales, Hymenomycetinæ.

III. Pteridophyta: Polypodiaceae.

IV. Selaginella, Salviniaceae and Marsiliaceae.

The Laboratory note-books of candidates shall be inspected and marked by Examiners, and if they are found to be unsatisfactory the candidates will be disqualified. Note-books which have not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

## GEOLOGY.

### PASS COURSE.

Besides a more precise and thorough acquaintance with the subjects prescribed for the Intermediate Examination in Science, a knowledge of the following additional questions shall be required:—

The methods for determining the form, size and weight of the Earth.

Precise description of the physical features of India and Burma.

The rate of downward increment of the internal heat of the Earth.

Methods of investigating the optical properties of crystals by light transmitted through thin sections. The construction and use of the Nicol's prism and the dichroscope ; pleochroism interference ; effects in polarised light. The relation of internal physical properties to the geometrical forms of crystals. The use of the reflecting goniometer. The 32 grades of crystal symmetry. Crystal axes ; systems of indices ; law of rationality of indices ; Crystal habit ; the twinning of crystals. Paramorphism. Description of the following additional minerals : sylvite, copper-glance, argentite, millerite, marcasite, mispickel, realgar stibnite, bismuthite, molybdenite, pyrrhotite, erubescite, tetrahedrite, pyrargyrite, bournonite, cuprite, pericles, brucite, goethite, diaspore, limonite, bauxite, gibbsite, anatase, brookite, pyrolusite, tridymite, braunite, psilomelane, franklinite, chrysoberyl, natron, rhodochrosite, aragonite, witherite, strontianite, crussite, chondrodite, ilmenite, sphene, serpentine, apophyllite, andalusite, kyanite, sillimanite, leucite, nepheline sodalite, lapis-lazuli, scapolite, stilbite, chabasite, analcite, natrolite, epidote, axinite, staurolite, chlorite, beryl, cordierite, vivianite, piemorphite, vanadinite, monazite, turquoise, tobernite, columbite, theuardite, celestine anglesite, kieserite, epsomite, goslarite, blodite, crocoite, wulfenite, wolfram, pitchblende.

The microscopic characters of the leading varieties of igneous rocks. Description of the family of nepheline syenite, and their plutonic and volcanic relatives. The origin and nature of meteorites. Nature of the following structures :—granophyric, aphanitic, hyalopilitic, glomeroporphyritic, taxitic, perlitic, mylonitic. The stages in the development of crystalline structure : divitification. Petrographical provinces. Magmatic differentiation and segregation. Phosphatic deposits. Anthracite. Amber. Petroleum. Asphalt. Bauxite and clay iron-stone. Rock salt. Alkaline deposits.

Artesian wells. Mineral springs. Denudation as a measure of geological time. The geological action of animals and plants. Causes and phenomena of the different varieties of metamorphism.

Description of the leading lithological characters and distinctive fossils of the groups and systems in the European standard stratigraphical scale compared with the recognised succession in India. A knowledge of the special characters and distribution of the chief series in India. The principles of correlation.

### *Practical Course.*

Besides a more precise and thorough knowledge of the subjects prescribed for the practical course in Geology for the

Intermediate Examination in Science, a knowledge of the following additional questions shall be required.

The recognition of specimens of the minerals and rocks enumerated in the foregoing syllabus. Drawing and description of crystals. The use of heavy liquids for the separation of minerals according to their specific gravities. The determination of the pleochroism, angle of extinction and character of double refraction in microscopic sections of minerals. The preparation and description of microscopic sections of rocks. The recognition of the following genera of fossils :—

Globigerina, Orbitolites, Texularia, Nummulites, Orbitoides, Zaphrentis, Cyathophyllum, Calceola, Omphyma, Isatræa, Favosites, Syringopora, Halysites, Stromatopora, Dictyonema ; Monograptus, Didymograptus ; Pentacrinus, Cyathocrinus ; Marsupites, Euerinus, Echinus, Sphaerites, Cideris, Micraster ; Fenestella ; Lingula, Crania, Productus, Orthis, Rhynchonella, Stringocephalus, Terebratula, Spirifer ; Nucula, Leda, Arca, Glycimeris, Gervillia Inoceramus, Halobia, Monotis, Ostrea, Glyphaea, Exogyra, Unio, Trigonia, Pecten, Lima, Mytilus, Pholadomya, Astarte, Hippurites, Lucina, Cardium, Tellina, Pholas ; Dentalium ; Patella, Pleurotomaria, Bellerophon, Euomphalus, Turbo, Natica, Turritella melania Cerithium, Cypræa, Pyrgula, Murex, Fusus, Voluta, Conus, Tentaculites, Physa, Limnæus, Planorbis, Helix ; Orthoceras, Nautilus, Tropites, Ceratites, Arcastes, Phylloceras, Baculites, Scaphites, Belemnites ; Agnostus, Trinucleus, Phillipsia, Calymene, Phacops ; Estheria, Cypris.

Glosopteris, Neuropteris, Lepidodendron, Voltzia.

The Laboratory note-books of candidates shall be inspected and marked by Examiners, and if they are found to be unsatisfactory the candidates will be disqualified. Note-books which have not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

#### HONOURS COURSE.

In addition to a more complete and detailed knowledge of the subjects prescribed for the Pass Course, candidates will be expected to show an acquaintance with the philosophical bearings of geological data, and with the economic aspects of mineral deposits, including the means usually adopted to estimate their quantities and variation in value according to local conditions. They will be expected to recognise leading species of the fossil genera enumerated for the Pass Course, and to assign to them their geological ages.

The Laboratory note-books of candidates shall be inspected and marked by Examiners, and if they are found to be unsatisfactory the candidates will be disqualified. Note-books which have

not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

## ZOOLOGY.

### PASS COURSE.

- I. General Principles of Biology. The cell in development and inheritance. The evidences bearing on the Hypothesis of Evolution. General Theories of Variation, Heredity, Adaptation and Origin of Species.
- II. (a) Distinctive characters of the Invertebrate groups and the structure and habits, etc., of Protozoa-Porifera, Cœlenterata, Platyhelminthes; Nematelminthes, Echinodermata, Arthropoda and Mollusca.  
(b) The distinctive characters, etc., of the Chordata groups and the structure and habits, etc., of Adelo-chorda, Urochorda, Cyclostomata, Pisces, Amphibia, Reptilia, Aves and Mammalia.
- III. General knowledge of the Indian orders of mammals.
- IV. The outlines of the development of the Frog and the Chick.
- V. Principles of Geographical distribution of animals.
- VI. General facts of Geological distribution of animals.

*The Practical Examination* shall include the dissection, microscopical examination and description of the following types:—Amœba, Paramœcium, Hydra, Leech, Cray-fish, Betti, Frog, Pigeon and Rabbit.

The Laboratory note-books of candidates shall be inspected and marked by Examiners, and if they are found to be unsatisfactory the candidates will be disqualified. Note-books which have not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

### HONOURS COURSE.

The Pass subjects treated much more fully, and in addition:—

1. The Embryonic development of the Mosquito.
2. The dissection, microscopical examination, and description of the Cockroach, Malaria mosquito and House lizard.

The Laboratory note-books of candidates shall be inspected and marked by Examiners, and if they are found to be unsatisfactory the candidates will be disqualified. Note-books which

have not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

## PHYSIOLOGY.

### PASS COURSE.

#### I. Chemical Physiology.

The ultimate and proximate principles of the animal body  
The Chemistry of albumen and its allies, carbohydrates, fats, and mineral solids found in the body and the food.

#### II. Histology.

Microscopical appearance of blood, lymph and milk.  
Histology and development of the cell.  
Segmentation of Ovum and formation of germinal membranes.  
Minute structure of the various organs and tissues of the animal body.

#### III. General Physiology.

Properties and General Physiology of Contractile Tissues.  
Functions and General Physiology of Nerve-cells and Nerve fibres.  
Nutrition.  
The Circulation of the Blood.  
Respiration : internal and external.  
Processes involved in Digestion and Absorption of food.  
Principles of Metabolism—*anabolic* and *katabolic*. Internal secretion.  
Excretion by kidneys, skin, lungs and liver.  
Production and regulation of animal heat.  
Mechanism of Locomotion, Voice and Speech.  
Physiology of the Brain and the Spinal cord and of the Sympathetic nervous system.  
Physiology of the Organs of Sense.

### *Practical Course.*

- (a) The Chemistry of Starch, Glycogen, Sugars, Albumen, Globuline Milk, Blood, Urine and the Digestive Juices and their actions.
- (b) The more common Histological Methods and the minute Anatomy of the elementary Tissues, Salivary Glands, Œsophagus, Stomach, Small, and Large. Intestines, Pancreas, Liver, Spleen, Lymphatic Gland, Thymus, Thyroid, Kidney, Lung, Skin, Tongue, and Spinal cord.

- (c) The most important Physiological Instruments, and the Methods of Physical Investigation of the functions of various organs as embodied in a number of experiments to be specified from time to time.

The Laboratory note-books of candidates shall be inspected and marked by Examiners, and if they are found to be unsatisfactory the candidates will be disqualified. Note-books which have not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

### HONOURS COURSE.

The Honours Course shall include the same subjects as the Pass Course treated more fully, and the standard of the Examination shall be higher than that of the Pass.

#### *Practical Course.*

The same as the Pass Course, with the addition of the following :—

- (a) Chemistry of Muscle, Nerve. Hæmoglobin and its derivatives and Pigments of Bile and Urine.
- (b) More advanced Histological technique and a detailed knowledge of the minute structure of Cerebrum, Cerebellum, Medulla Oblongata, Pons Varolii, Eye, Ear, Tastebuds, Olfactory Mucous Membrane, Olfactory Bulb, Ovary and Testis.
- (c) A number of additional experiments to be specified from time to time.

The Laboratory note-books of candidates shall be inspected and marked by Examiners and if they are found to be unsatisfactory, the candidates will be disqualified. Note-books which have not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

## EXPERIMENTAL PSYCHOLOGY.

### PASS COURSE.

The examination shall consist of the following parts :—

- (1) General Psychology ... .. *One paper.*  
The Syllabus shall be identical with the Syllabus in Psychology (Pass Course) for the B.A. Examination.
- (2) Experimental Psychology ... .. *One paper.*  
Analysis of Sensation.

Qualities of Sensation. Theory of specific nervous energy.  
Touch : heat spots, cold spots, pressure spots, pain spots.  
Taste : distribution of sensitiveness over the tongue, taste

mixtures and contrasts. Smell : compensations and contrast. Hearing : simple tones, simple clang and its analysis, timbre, noises and their analysis, partial tones, beats, combination tones. Sight : colour tones, the white black series, saturation ; colour zones in the Retina, colour mixtures, colour contrasts, after-images.

Intensity of sensation : methods of measurement. Stimulus-threshold. Difference-threshold. Weber's Law. Fechner's Law. Individual differences of sense endowment.

Analysis of Perception : localisation and projection. Spatial perception. Local signs. Tactile space. Localisation of points on the skin. Combined Touch and Movement. Spatial Perception of the Blind. Visual space : the Retinal image, the mechanism of accommodation, Eye-movement. Binocular vision. Perception of form, distance and size. Visual perception of movement. Optical illusions. Auditory perception. Binaural audition. Localisation of sound. Consonance, harmony and rhythm. Illusions and pre-perceptions.

Attention : intensity, duration and fluctuations of attention, maximal range of attention.

Ideation : ideational types, memory-types, Galton's questionnaire.

Association of ideas, and its conditions. Experimental tests. Time relations of mental phenomena. Reaction time and its elements. Psychophysical time and its elements. Simple Reaction. Complex Reaction, Apperception-time, Will-time, Circuit of consciousness. Effects of Attention, Practice and Fatigue, on Reaction time. Subjective estimation of time-length and time order.

(3) Practical Examination ... .. *One day.*

*The practical examination* shall be conducted with special reference to the use of apparatus and psycho-physical methods (including statistics), and the mode of carrying out an experimental investigation submitted to the candidate. The candidate shall be required to examine an individual on acuity of senses (including liminal sensations and the difference-threshold), colour vision, tone discrimination, localisation, estimation of spatial and temporal magnitudes, ideational type, intensity and range of attention, association of ideas, and reaction-times.

The Laboratory note-books of candidates shall be inspected and marked by Examiners and if they are found to be unsatisfactory, the candidates will be disqualified. Note-books which have not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

#### HONOURS COURSE.

The examination shall consist of the following parts :—

(1) *General Psychology* ... .. *One paper.*

The Syllabus shall be identical with the Syllabus in Psychology (Honours Course) for the B.A. Examination.

(2) *Physiological and Comparative Psychology* One paper.

The Nervous System :—

Nerve-tissues : chemical constitution, structural forms, and physiological functions.

The Nervous System of Man :—

The sympathetic system, the cerebrospinal system, the spinal cord, and the encephalic centres ; structure and functions. Spinal and cranial nerves.

The Muscular System :—

Structure and functions of muscles, muscles and muscular groups, the locomotive apparatus, the human hand, the vocal organs, the so-called nerve-muscle machine.

Nature of nerve current : various theories. The laws of nervous conduction, the paths of conduction in the spinal cord and the brain, automatic and reflex functions of central organs, localisation of cerebral functions.

End-organs of smell, taste, touch, hearing and sight ; Structure and functions.

Development of the nervous system in Mollusca, Arthrozoa and Vertebrata. Embryonic development of the nervous system of man. The Physiological basis of spatial perception, localisation, retention, association and revival of ideas, imagination, verbal memory and language, feeling, pleasure and pain, emotional expression, automatic and reflex action, instinct, heredity, attention and acts of the will.

Normal and abnormal states. Subliminal consciousness, double consciousness, hypnotism, reverie, dream, hallucinations, sleep.

Mental evolution in the animal kingdom : instinct and animal intelligence.

Mental evolution in the race : Mental characteristics of primitive races, race-consciousness.

Mental evolution in the Individual. Mental characteristics of different ages and sexes :

(3) *Experimental Psychology* ... .. Two papers

In addition to the Pass Course, the following subjects :—

Analysis of sensation :—

Theory of specific energy :—Evidence from the end-organs of Hearing, Sight and Touch.

Touch—Temperature :—Determination of the Zero-point, adaptation and contrast in temperature sensations.

Temperature and Pressure spots :—Construction of maps of the skin.

Smell :—The field of smell.

Hearing :—Sensitiveness of the ear to differences of pitch and purity of interval.



**Sight** :—The colour triangle, the colour pyramid. Laws of colour mixture and colour contrast. Visual after-images, negative and positive. Theories of Helmholtz, Hering and Wundt.

**Intensity of sensation** :—Stimulus-threshold and difference-threshold for tactile, auditory, visual, and muscular sensations. Fechner's formulæ : interpretations of Weber's Law.

**Analysis of Perception** :—

**Touch** :—Discrimination (1) of a single point, (2) of two points on the skin. Discriminative sensibility of the skin for motion.

Localising of muscular sensations.

**Visual space** :—the Reduced Eye of Listing, corresponding Retinal points and double images. Stereoscopic and Perspective vision.

**Ideation** :—Galton's questionnaire, and other methods.

**Association of ideas** :—Experimental tests of frequency, recency and other conditions.

**Trains of ideas**. Speed of mental trains : individual differences.

**Time relations of mental phenomena** :—

Smallest interval of separate sensations. Rise and fall of intensity of sensation. Simple Reaction—the natural, the sensorial and the muscular reaction. Discernment-time for sensations. Discernment-time for localisation. The reading and the multiplication of numbers. Discernment with choice and speed of decision. Association-time. Individual differences

(4) *Practical examination in Experimental Psychology.*

*Two papers.*

The practical examination shall cover the entire course as laid down in the above syllabus on Experimental Psychology. The examination shall be conducted with special reference to the use of apparatus and psycho-physical methods (including statistics), and the mode of carrying out experimental investigations submitted to the candidate, and shall include the examination of an individual or individuals with regard to any matter within the scope of the syllabus.

The distribution of subjects as regards the examination in Experimental Psychology shall be as follows :—

First theoretical paper, and first day's Practical Examination :—Sensation and Perception.

Second theoretical paper, and second day's Practical Examination :—Attention, Ideation, Association of Ideas, and Time-relations of mental phenomena.

The Laboratory note-books of candidates shall be inspected and marked by Examiners, and if they are found to be unsatisfactory, the candidates will be disqualified. Note-books which have not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

### ANTHROPOLOGY.

The Pass Course in Anthropology shall be distributed as follows:—

*Paper I.*—General outlines of Anthropology.

*Paper II.*—Ethnology of India with special reference to some particular province.

*Paper III.*—Practical examination (simple measurement and observations).

The Laboratory note-books of candidates shall be inspected and marked by Examiners, and if they are found to be unsatisfactory the candidates will be disqualified. Note-books which have not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

The Honours Course in Anthropology shall be distributed as follows:—

*Paper I.*—General outlines of Anthropology.

*Paper II.*—Ethnology of India with special reference to some particular province.

*Papers III & IV.*—A general outline of the racial and cultural history of India.

*Papers V & VI.*—Practical examination (candidates will be expected to be familiar with tribal and racial types and to be able to take selected measurements of living persons). Suitable Books, Papers and other sources of study will be recommended from time to time by the Board of Higher Studies in Anthropology with a view to indicate the scope and extent of knowledge expected to be possessed by the candidates.

The Laboratory note-books of candidates shall be inspected and marked by Examiners, and if they are found to be unsatisfactory the candidates will be disqualified. Note-books which have not been signed at frequent intervals by the Professor under whom the candidates worked will not be accepted.

Students who have passed the Intermediate Examination with Mathematics, Physics and Chemistry may be examined in one of the following *alternative* Honours Courses:—

#### COURSE A.

- |                         |     |   |
|-------------------------|-----|---|
| I. Pure Mathematics     | ... | Two Papers.                             |
| II. Applied Mathematics | ... | Three Papers.                           |
| III. Drawing            | ... | One Paper and a Practical Examination.  |
| IV. Physics             | ... | Two Papers and a Practical Examination. |
| V. Chemistry            | ... | One Paper and a Practical Examination.  |

Pure Mathematics shall include—

- (a) Higher Algebra.
- (b) Higher Plane Trigonometry.
- (c) Vector Analysis.
- (d) Analytical Geometry (Plane).
- (e) Analytical Geometry (Solid).
- (f) Differential Calculus.
- (g) Integral Calculus.
- (h) Differential Equations.

Applied Mathematics shall include—

- (a) Statics and graphical statics.
- (b) Dynamics of a Particle.
- (c) Elementary Rigid Dynamics.
- (d) Hydrostatics.
- (e) Hydraulics.
- (f) Strength of Materials.

Drawing shall include—

- (a) Tracing.
- (b) Descriptive Geometrical Drawing.
- (c) Drawing from models.
- (d) Design of machine elements.

Physics shall include—

- (a) General properties of matter.
- (b) Heat and technical thermodynamics.
- (c) Electricity and magnetism including Electro-mechanics.
- (d) Light.

Chemistry shall include a general knowledge of the subject, with special reference to

- (a) Technology of water—determination of hardness and softening process.
- (b) Fuel—determination of calorific power of different technical fuels.
- (c) Chemistry of combustion.

- (d) Lubricating oils—determination of viscosity, flash point and suitability for different purposes.
- (e) Chemistry of technically important metals with special stress on iron and steel.

## COURSE B.

I.	Pure Mathematics	...	Two Papers.
II.	Applied Mathematics	...	Two Papers.
III.	Drawing	...	One Paper including Practical Examinations.
IV.	Physics	...	Three Papers and two Practical Examinations.
V.	Chemistry	...	One Paper and Practical Examination.

Pure Mathematics shall include—

- (a) Analytical Geometry (Plane).
- (b) Analytical Geometry (Solid).
- (c) Vector Analysis.
- (d) Differential Calculus.
- (e) Integral Calculus.
- (f) Differential Equations.

Applied Mathematics shall include—

- (a) Statics and graphical statics.
- (b) Dynamics of a particle.
- (c) Elementary Rigid Dynamics
- (d) Hydrostatics.
- (e) Hydraulics.
- (f) Strength of Materials.

Drawing shall include—

- (a) Tracing.
- (b) Descriptive Geometrical Drawing.
- (c) Drawing from models.
- (d) Design of machine elements

Physics shall include—

- (a) General properties of matter.
- (b) Heat.
- (c) Electricity and magnetism.
- (d) Light.
- (e) Sound.

Chemistry shall include—

Physical Chemistry.

Candidates will be expected to possess a knowledge of the general principles of Chemistry.

## COURSE C.

- |      |                     |     |  |
|------|---------------------|-----|--|
| I.   | Pure Mathematics    | ... | One paper.                                     |
| II.  | Applied Mathematics |     | Do.  |
| III. | Drawing             | ... | One Paper including Practical Examination.     |
| IV.  | Physics             | ... | Two Papers and a Practical Examination.        |
| V.   | Chemistry           | ... | Three papers and three Practical Examinations. |

Pure Mathematics shall include—

- (a) Analytical Geometry (Plane).
- (b) Analytical Geometry (Solid).
- (c) Vector Analysis.
- (d) Differential Calculus.
- (e) Integral Calculus.
- (f) Differential Equations.

Applied Mathematics shall include—

- (a) Hydrostatics.
- (b) Hydraulics.
- (c) Strength of Materials.

Drawing shall include—

- (a) Tracing.
- (b) Descriptive Geometrical Drawing.
- (c) Drawing from models.
- (d) Design of machine elements.

Physics shall include—

- (a) General properties of matter.
- (b) Heat including thermodynamics of heat engine.
- (c) Electricity and magnetism including elementary principles of electrical machines.
- (d) Light.

Chemistry shall include—

- (a) Physical Chemistry.
- (b) Inorganic Chemistry.
- (c) Organic Chemistry.

The limits of each subject in each course shall be defined by a detailed syllabus to be drawn up from time to time jointly by the Board of Studies and the Board of Higher Studies concerned. Special stress will be laid on the practical applications of the subjects.

100 marks shall be assigned to each written paper and to each practical examination. In order to pass, a candidate must obtain 80 marks in each written paper, 40 marks in each practical examination, and 400 marks in the aggregate. A candidate who obtains 720 marks shall be placed in the First Class and a candidate who obtains 480 marks shall be placed in the Second Class.

Candidates shall be required to produce laboratory note-books and other records of regular work during the entire period of study. These will not be accepted and valued unless duly attested and certified by a recognised teacher at regular intervals. Candidates may be questioned orally with regard to the contents of their note books and other records.

### GENERAL.

1. A candidate must obtain in order to pass in the Pass Course in—

Mathematics	...	100 marks.
Any other subject	...	60 marks in the theoretical papers. 40 marks in the practical papers.

2. A candidate must obtain in order to pass in the Honours Course in—

Mathematics	...	180 marks.
Any other subject	...	108 marks in the theoretical papers. 72 marks in the practical papers.

3. A candidate must obtain, in order to attain the Honours standard, in—

Mathematics	...	240 marks.
Any other subject	...	160 marks in the theoretical papers. 80 marks in the practical papers.

4. If a candidate takes up the Pass Course in three subjects he must, in order to pass the B.Sc. Examination, pass in each subject, and obtain 324 marks in the aggregate. If he passes and obtains 450 marks in the aggregate, he shall be declared to have passed with distinction.

5. If a candidate takes up the Pass Course in two subjects, and the Honours Course in one subject, he must, in order to pass the B.Sc. Examination, pass in each subject, and obtain 482 marks in the aggregate. If he passes and also attains the Honours standard in his Honours subject, he shall be declared to have obtained second class Honours in that subject. If he passes, attains the Honours standard in his Honours subject, and obtains 360 marks in that subject, he shall be declared to have obtained first class Honours in such subject.

6. Any candidate who has failed in one subject only, by not more than 5 per cent. of the full marks in that subject, and has shown merit by gaining 50 per cent. or more in the

aggregate of the marks of the examination, shall be allowed to pass. If any such candidate has taken up the Pass Course in three subjects, he shall not be declared to have passed with distinction. But if the candidate has taken up the Pass Course in two subjects and the Honours Course in one subject, and has attained the Honours standard in such subject, he shall be allowed to retain his Honours and his place in the Honours list.

7. If the Examiners are of opinion that in the case of any candidate not covered by the preceding Regulation, consideration ought to be allowed by reason of his high proficiency in a particular subject or in the aggregate, they shall report the case to the Syndicate, and the Syndicate may pass such candidate, or give him Honours, as the case may be.

## CHAPTER XXXVII.

### MASTER OF SCIENCE.

1. An examination for the Degree of Master of Science shall be held annually in Calcutta, commencing at such time as the Syndicate shall determine, the approximate date to be notified in the Calendar.

Any candidate who has passed the B.Sc. Examination not less than two academical years previously may be examined for the Degree of M.Sc. in any subject mentioned in Regulation 5, provided he has prosecuted a regular course of study for two academical years in a College or Colleges affiliated to the University in respect of that subject and standard, or under one or more University Professors or Lecturers in that subject.

Any candidate who has passed the B.Sc. Examination not less than three academical years previously may be admitted as a private student to the M.Sc. Examination in Mathematics subject to the provisions of section 19 of the Indian Universities Act.

2. \*Every candidate shall send in his application with a certificate in the form prescribed by the Syndicate and a fee of Rs. 80 to the Registrar not less than three months before the Examination. If a student desires to appear in the M.Sc. Examination in Experimental Psychology he shall give the Registrar one year's notice of the fact.

3. Any Master of Science may, on payment of a fee of eighty rupees, be admitted to the M.Sc. Examination in any branch other than in which he was previously examined, provided that if he takes up a subject other than Mathematics, he has

\* Candidates who take up Mathematics shall send in their applications and fees to the Registrar six months before the commencement of the Examination.

prosecuted a regular course of study in that subject for a period of two academical years in a College affiliated to the University in respect of that subject and standard, or under one or more University Professors or Lecturers. He shall, if his attainments come up to the standard prescribed for the Degree of M.Sc., be granted a certificate to that effect, stating the subject and class in which he has passed.

4. A candidate who fails to pass, or to present himself for examination, shall not be entitled to claim a refund of the fee. A candidate who fails to pass or present himself may be admitted to any one or more subsequent M.Sc. Examinations on payment of a like fee of eighty rupees on each occasion.

5. A candidate may be examined in any of the following subjects:—

- I. Mathematics.
- II. Chemistry.
- III. Physics.
- IV. Botany.
- V. Physiology.
- VI. Zoology and Comparative Anatomy.
- VII. Geology.
- VIII. Experimental Psychology.
- IX. Anthropology.

6. There shall be a Practical Examination in all subjects other than Mathematics, and candidates shall be required to pass in the practical portion of these subjects as well as in the theoretical portion defined in the Syllabuses.

In Mathematics there shall be eight papers of four hours each, each carrying 100 marks.

In Physics there shall be five theoretical papers of four hours each, each carrying 100 marks, and the Practical Examination shall extend over at least three days and shall carry 300 marks.

In all other subjects there shall be four theoretical papers of four hours each and the practical examination shall extend over at least four days. The total marks shall be equally divided between the theoretical and practical portions of the Examination.

7. The limits of the subjects shall be as follows:—

#### MATHEMATICS.

Candidates in Mathematics shall be examined in either Pure Mathematics or Mixed Mathematics.

The subjects in Pure Mathematics shall be as follows:—

1. Higher Algebra.
2. Higher Plane Trigonometry.
3. Spherical Trigonometry.
4. Theory of Equations and Algebra of Quantities.



5. Plane Analytical Geometry, including Higher Plane Curves.
6. Geometry of Surfaces.
7. Differential Calculus.
8. Integral Calculus.
9. Differential Equations.
10. Calculus of Variations.
11. One subject to be selected by the candidate from the following group:—
  - A. Theory of Functions.
  - B. Theory of Groups.
  - C. Finite Differences and Calculus of Functions.
  - D. Vector Analysis and Quaternions.
  - E. Projective Geometry.
  - F. Theory of Numbers.

Eight four-hour papers shall be set to be distributed as follows:—

- I.—1, 2, 3.
- II.—4.
- III.—5.
- IV.—6.
- V.—7, 8.
- VI.—9, 10.
- VII. and VIII.—11.

The subjects in Mixed Mathematics shall be as follows:—

1. Advanced Statics, including Theory of Potential.
2. Dynamics of a Particle.
3. Rigid Dynamics.
4. Hydrostatics, including Capillarity.
5. Hydrodynamics.
6. Spherical Astronomy.
7. One subject to be selected by the candidate from the following group:—
  - A. Theory of Elasticity.
  - B. Advanced Dynamics.
  - C. Higher Parts of Spherical Astronomy.
  - D. Lunar and Planetary Theories.
  - E. Figure of the Planets.
  - F. Theory of the Tides.

One four-hour paper shall be set upon each of the Compulsory subjects, and two papers on the Additional subject.

A candidate who has taken his B.Sc. Degree with Honours in Mathematics may offer a piece of research work in any portion of the subject he has been studying in lieu of examination in two papers in the remaining portion of the examination. The maximum number of marks assigned to the research work shall be equal to the number assigned to the two papers he would otherwise have taken up.

## CHEMISTRY.

Candidates in Chemistry shall be examined in the following:—

- (A) Physical Chemistry.
- (B) Inorganic Chemistry.
- (C) Organic Chemistry.

They will be expected to show a detailed knowledge of any one of these branches and a general knowledge of the other two.

There shall be a Practical Examination comprising qualitative and quantitative analysis, and the preparation of chemical specimens.

Candidates must produce note-books of their laboratory work, which must be duly certified by the Professor and shall be taken into account in estimating their qualifications.

Candidates who have taken their B.Sc. Degree with Honours in Chemistry may offer a piece of research work in the special branch selected by them in lieu of examination in the other two. The maximum number of marks assigned to the research work shall be half the marks assigned to the whole examination.

*ALTERNATIVE COURSE IN CHEMISTRY.*

## GENERAL COURSE.

1. A course of training (both theoretical and practical, including analytical) in Inorganic, Organic and Physical Chemistry to meet the requirements of the Applied Chemistry students.

2. Elementary course in mechanical and electrical engineering, including drawing and workshop practice.

3. Knowing of the more common appliances used in Chemical Industries (together with their theories), including acquaintance with small-scale operations.

4. Special course:

Any one of the following, including drawing up of balance sheets:—

(1) Glass; (2) Ceramics; (3) Tanning; (4) Paints; Pigments and Varnishes; (5) Fats and oils, waxes; (6) Soaps candle, glycerine; (7) Fermentation.

## INORGANIC CHEMISTRY.

The Industrial gases.—Large scale preparation, testing of purity, storage and liquefaction; acids, alkalis, and salts; clay and its properties—analysis; manufactures of alum and aluminium sulphate; chrome-alum; superphosphates; slags cement; mortar, hydraulic lime; enamel, porcelain; glass; abrasives; a general course on metallurgy with reference to iron, copper,

gold, silver, lead, tin, antimony, zinc, cadmium, aluminium, sodium, Ni, achromium, Hg, silicon; thermite process; uses thereof in the industries; special alloys (tantiron), etc., By-product plant; Chemistry of pigments.

### PHYSICAL CHEMISTRY.

#### *Syllabus.*

Course for students of Applied Chemistry (an alternative course in Chemistry for the M.A. and M.Sc. Examinations of the University of Calcutta).

#### A.—THEORETICAL.\*

##### 1. Units.

##### 2. Kinetic theory of matter and its applications—

Solid, liquid and gaseous states; Maxwell's law of distribution of velocities; characteristic equations of gases; hydrogen scale of temperatures; air thermometer; measurement of pressure; Joule-Thomson effect; liquefaction of gases; mechanical production of cold; surface tension; orientation of molecules at surfaces; viscosity.

##### 3. Thermochemistry—

Temperature standards; mechanical equivalent of heat; calorimetry; specific heats; change of energy of transformations with temperature; thermochemical notations; heat balance sheets; measurement of temperature; heating and cooling arrangements; Thermodynamic scale of temperature; thermodynamic functions; Clausius and Clayperon equation; Le Chatleir and Braun's principle of mobile equilibrium.

##### 4. Solutions—

Law of mixtures, partial molar quantities; dilute solutions; theory of fractional distillation.

##### 5. Chemical Statics—

Real and false equilibrium; thermodynamics and chemical equilibrium; Nernst's heat theorem; Phase law; alloy and silicate systems; elements of metallography.

##### 6. Chemical Dynamics—

Theories of catalysis; space velocity diagrams; chemical and economic efficiency; study of typical industrial gaseous reactions.

##### 7. Electrochemistry—

Electrolytic dissociation; electromotive force of cells; electroanalysis; electroplating; electrolytic industries; indicators.

8. Colloidal solutions; absorption; ultrafiltration; stability; electrical change and hydration; colloids in industries.

\* Stress will be laid only on the fundamental outlines of the theories and more on a definite knowledge of their applications.

9. Photochemistry (elementary treatment).
10. Elementary treatment of radioactivity.

### B.—PRACTICAL.

Practical course will correspond to the theoretical syllabus, including an acquaintance with the more important methods of measurement used in industrial processes.

#### *Syllabus for Organic Chemistry.*

(1) Theories of Organic isomerism; Stereo isomerism; Geometrical isomerism; Ketenol phases; Transformations; Conceptions of valency as used in Organic Chemistry; Colour and constitution; (2) Group reactions and important synthetic methods; (3) Chlorination, bromination, iodination; nitration, reduction, oxidation, sulphonation, carboxylation; etc.; (4) Organic separation and purification; (5) Technically important preparations.

#### *Syllabus for Special Subject.*

##### Fermentation—

(1) Modern and ancient theories; (2) Bio-chemical laboratory requisites and their use; (3) Anatomy of the more common bacteria and cells; (4) Enzymes and enzyme theories; (5) Moulds; (6) Yeast and its properties; (7) Brewery yeast; distillery and dress yeast wine yeast; (8) Large scale pure culture for industrial application; propagation apparatus, despatch of pure culture, etc.; (9) Influence of phosphate on alcoholic fermentation; (10) Enzymes, co-enzymes; inorganic ferments; Carboxylase of Neuberg; Erhlich's work; origin of fusel oil in yeast fermentation of sugars; the polypeptides; (11) Reductase and Oxidase—Bach's theory; (12) Laccase, lipase, etc.; (13) Critical review of the lactic acid; glyceraldehyde-dihydroxy acetone, pyruvic acid and formic acid theories of alcoholic fermentation; Graaf and Le Fevre's theory; Sclator and Wolfgang Ostwald's views, etc.; (14) Sources of alcohol, natural and synthetic; comparison and costs; (15) Distillation of alcohol; various types of stills; purification processes, solid alcohol; use in engines; (16) acetone manufacture; vinegar; lactic acid; butyric acid, rubber industry.

#### *Syllabus for Chemical Technology.*

Manufacture of commercially important drugs; acids; alkalis; alkaloids (quinine strychnine, etc.); indigo; alizarin, and other important dyes; antiseptic; essential oils; perfumes and perfumery requisites; cellulose; leather; pulp; canesugar; soap, glycerine; margarine; vegetable oils; earth oil; artificial silk;

rubber; fermentation; fertilisers; inks; explosives; celluloids; glass; enamel; porcelain; cement; hydraulic lime; and other more important industries.

*Syllabus for Chemical Engineering.*

(1) Industrial units, (2) Fluids film, (3) Flow of fluids, (4) Flow of heat, (5) Fuels and power, (6) Furnaces and kilns, including gas producers, (7) Crushing and grinding, (8) Mechanical separation, (9) Filtration, (10) Evaporation, (11) Drying, (12) Distillation, (13) Transport of solids, liquids and gases, etc., (14) Reaction chambers, etc.

PHYSICS.

Candidates in Physics will be expected to possess a sound knowledge of the general principles of the subject, including the more fundamental advances made of recent years and a detailed knowledge of a special selected topic as indicated below.

Five theoretical papers shall be set, of which the first three shall cover a general course of Mathematical and Experimental Physics distributed as follows:—

*Paper I.*

(a) Mechanics of Solids and Fluids, including Vibrations and Wave-motion.

(b) General Properties of Matter and Kinetic Theory of Gases.

*Paper II.*

(a) General Theory of Heat and Thermodynamics.

(b) Optics of Transparent Media.

*Paper III.*

Electricity and Magnetism including Elements of Electromagnetic Theory of Light.

The fourth paper shall cover generally the more recent and fundamental developments in Electrical Theory distributed as follows:—

*Paper IV.*

Elements of Electron Theory and the Quantum Hypothesis including, experimental methods in the study of Electrons, X-radiation, Positive Rays and Radio-activity.

The fifth paper shall be set on a special topic of which the candidate is expected to possess a detailed knowledge.

Appended is a list of such topics which may be added to or

modified from time to time by the Board of Higher Studies in Physics.

### *Paper V.*

One of the following subjects:—

- A. Theory of Optical Instruments.
- B. Spectroscopy.
- C. Dispersion and Scattering of Light.
- D. Advanced Acoustics.
- E. Advanced Thermodynamics and Kinetic Theory of Matter.
- F. Electrical Oscillations and Wireless.
- G. X-rays and Crystal Structure.
- H. Relativity.

The practical Examination shall consist of three parts. The first part shall be so conducted as to test the candidate's general proficiency in physical experiments and measurement. The second and third parts shall test his proficiency in advanced electrical work and his practical knowledge of the special subject offered by him for the fifth theoretical paper.

Candidates who have taken their B.Sc. Degree with Honours in Physics or Mathematics may be permitted to offer a piece of research work in lieu of the fifth theoretical paper. Before such permission is granted, the candidate will be required to produce a duly certified Laboratory record and satisfy the Board of Higher Studies in Physics by appearing at a practical test or otherwise, that he has during the first year's course of study diligently carried out a course of Practical work. The production of the thesis will then exempt him from any further practical Examination. The maximum marks allotted to the research work shall be 300, and 100 marks shall be allotted to the special *viva voce* examination of the candidate on the subject of his thesis.

The candidates who offer a piece of research work shall be grouped in order of merit separately from the others appearing at the examination.

## *ALTERNATIVE COURSE IN PHYSICS.*

### Electricity and Magnetism.

#### *Lectures—*

1. Electrostatics and Electrodynamics.
2. Theory of electrical instruments (general), Galvanometers, electrometers, amperemeters, voltmeters, measurements of resistances, current voltages, capacity induction.

3. Theory of electrical instruments (special), Oscillographs, Watthourmeters, Phasemeters, Frequency meters, Characteristics of dynamos and motors.

4. Principles of generation of electric currents, low voltage generation, storage cells.

Medium voltage generation, Direct current generators, Dynamos, Alternators of different types. Turbo alternator, Motor generator, Rotary converters.

High voltage generation, Transformers, Theory of transformer (the different types).

Wave from frequency phase, rectification.

Motors of different types.

Direct current series, shunt, compound wound starter, Speed regulator.

Alternate current induction motor, synchronis motors, ship ring motors, polyphase motors Starter, speed regulation.

Effect of inductance and capacity.

Special paper.

5. High Frequence current.

Their generation and reception in Radio telegraphs

6. Illumination Technology.

#### *Practical—*

(a) Accurate measurement of low resistances.

(b) „ „ „ voltage.

(c) „ „ „ amperage.

(d) Standardisation of thermocouples.

(e) „ „ „ Platinum thermometers.

(f) Measurements of insulation resistances.

(Coils, switches, fust boxes, cleats, telegraph and telephone insulators, the resistances of insulation of field coils and armatures of motors.)

7. Measurements of Permeability of different samples of iron and heat loss in complete cycles

(a) By anchor ring method.

(b) Hopkinson double yoke method.

(c) Ewing's Permeameters.

(d) Kopsel's Permeameters.

(e) Maquetometer methods.

(f) Rapid anchor ring method of Kapp.

8. Determination of Magnetic field.

(a) Sluxmeter.

(b) Standard coil and Ballistic Galvanometer.

(c) Lenard's spiral.

9. Measurement of capacity.

10. Measurement of Induction.

Coeff. of self-Induction.

„ „ mutual induction of two circuits.

11. Measurements of the ratio of transformation of two circuits.
12. The dielectric capacity of oils and mica ebonite glass.
13. Study of the wave form of different types of generator.
  - (a) Duddel oscillograph.
  - (b) Cathode-ray Oscillograph.
14. The characteristic curves of dynamos and motors.
15. Accurate measurement of frequency of oscillation.
16. Study of the characteristics of the wave forms of high frequency currents with Cathode-ray oscillograph.
17. Life curves of different class of electric lamps.
18. Study of a storage cell.
19. Study of the horse power of a motor.
  - (a) Prony brake.
  - (b) Friction brake.
  - (c) Absorption dynamometers.
  - (d) Cradle type dynamometers.
20. Study of the different losses of motors.
  - (a) Iron loss, Eddy current and Hysteresis loss.
  - (b) Heat loss.
  - (c) Friction and windage.
21. Study of A. C. motors.
  - (a) Torque variation.
  - (b) Effect of capacity.
  - (c) Phase alternation.

## HEAT.

### Lectures.

1. *General Heat* comprising thermometry, specific Heat, change of state, conduction, radiation.
2. *General principles of thermodynamics.*
3. *Kinetic theory of gases.*
4. *Technical thermodynamics.*

### Theory of Heat Engines.

(a) Steam Engines :—

Condensing, non-condensing.

Single expansion, double expansion, compound uniflow, locomobile.

Action of superheated steam.

Steam, diagram.

$\theta \phi$  diagram, the ideal cycles and the actual cycles, the action of the valves and valve gears.



- (b) Internal combustion engines.
  - Four cycle
  - Two cycle.
- (i) Ignition type, explosion type.
  - Semi Diesel.
- (ii) Diesel type.
  - The theoretical consideration of efficiency of different types p. v. indicator diagrams  $\theta \phi$  diagrams.
- 5. *Theory of Refrigeration.*
  - Thermodynamics of Joule Thomson effect.
  - Properties of  $\text{CO}_2$ , Ammonia  $\text{SO}_2$ .
  - Compression and temperature drop.
  - Heat Exchange.
- 6. *General Properties of Matters.*
  - Elasticity and Elastic Limits.
  - Young's Modulus and Poisson Ratio Rigidity and Shear Hardness and Hertz's theory of Impact, Viscosity and Lubrication.
  - Torsional rigidity, Bending moment, etc.

*Practical—*

1. Mechanical Equivalent of Heat.
2. Conductivity of solids, liquids and gases.
3. Variation of specific heat with temperature of gas and gas mixtures.
4. Measurements of high temperatures, Pyrometry (Black body radiation).
5. Study of an internal combustion engine.
  - (a) Pressure volume record (Indicator diagram by micro-indicator).
  - (b) Calorific value of liquid fuel by Mahlercook apparatus.
  - (c) Calorific value of gas mixtures in engine cylinders (by Boy's gas calorimeter).
  - (d) Viscosity and flash point determination of different liquid fuels.
  - (e) Determination of  $\text{CO}_2$  in the exhaust gas (by platinum thermometer).
  - (f) Measurement of the Horsepower of an engine by Prony brake.
  - (g) Determination of the Joule effect in Oxygen,  $\text{CO}_2$ ,  $\text{NH}_3$ , by gas compressor and platinum thermometer.
  - Determination of Young's modulus by bending and Poisson's ratio.
  - Determination of Hardness by law of impact by two ball methods.

Determination of viscosity of liquids and gases.

*A Course on Drawing.*

Screw threads—Forms and proportions of Bolts, Nuts, screws and studs.

Shafts, Pedestals, Hangers, Brackets.

Valves of Steam Engine, Slide Valves.

Corliss valve, Tappet valves of Oil Engines.

Crankrods and cylinders of different types of Oil Engines, Bearings, Thurst Bearing, Ball Bearing, Drawings for high speeds.

Designing of Generators and motors of small capacities.

*Workshop Practice.*

1. Fitting—Internal and external angle gauges.
2. Simple turning of round rod, flat disc.
3. Screw cutting with a lathe.
4. Drilling.
5. Milling.
6. Simple grinding of two true surfaces.  
Cylindrical grinding.  
Internal and external grinding.
7. Testing of a lathe bed and performance of various chucks.

BOTANY.

Candidates in Botany shall be examined in—(1) General Morphology, (2) Special Morphology, including classification, (3) Histology, (4) Physiology, including Phytodynamics, (5) Distribution of plants, in space, (6) Distribution of plants in time and its bearing on the theory of descent.

2. Candidates will be expected to show a detailed knowledge of either (1) and (2) or (3) and (4).

3. *The Practical Examination* shall include (a) the making of microscopic sections of plants or parts of plants including staining and application of microchemical reagents; (b) examination, description and identification of microscopic preparations provided by the Examiners or made by the candidates; (c) examination, description, systematic determination and identification of plants or parts of plants; (d) the performance of physical or chemical experiments, or the setting up and description of apparatus, relating to the physiology of plants.

Candidates must produce note-books of their Laboratory work, which must be duly certified by the Professor, and shall be taken into account in estimating their qualifications.

Candidates who have taken their B.Sc. Degree with Honours in Botany may offer a piece of research work in the branch which

they have selected for special study in lieu of examination in (5) and (6) and the practical work under (c). The maximum marks for the research work shall be 200.

### PHYSIOLOGY.

The candidate must be prepared to submit himself to a very thorough examination in Physiology. He shall name a particular branch of Physiology which he has made a special study of, and in which the examination will be more searching than in the rest.

*The Practical Examination* shall include—

- I. Chemical Physiology.
- II. Histology.
- III. Experimental Physiology.

The candidates shall name for part of his Practical Examination one of the above subjects in which the test shall be more searching than in the others.

Candidates must produce note-books of their laboratory work, which must be duly certified by the Professor, and shall be taken into account in estimating their qualifications.

Candidates who have taken their B.Sc. Degree with Honours in this subject shall be allowed to offer a piece of research work in the branch in which they have specialized in lieu of a portion of the examination in the other part, not carrying more than 200 marks.

### ZOOLOGY AND COMPARATIVE ANATOMY.

The candidate must be prepared to submit himself to a thorough examination in Zoology. He shall name a group of animals of which he has made a special study and in respect of which the examination will be more searching than in the rest.

*The Practical Examination* shall include dissection, microscopical examination and description of types selected out of the group of animals referred to above. The candidate must be prepared to show his practical acquaintance with histological and embryological technique.

Candidates must produce note books of their Laboratory work, which must be duly certified by the Professor, and shall be taken into account in estimating their qualifications.

Candidates who have taken their B.Sc. Degree with Honours in this subject shall be allowed to offer a piece of research work in the branch in which they have specialized in lieu of a portion of the examination in the other part not carrying more than 200 marks.

## GEOLOGY.

Candidates who offer themselves for examination in Geology for the M.Sc. Degree may elect to specialize in either—

(a) The Mineralogical and Petrological branch, or (b) the Stratigraphical and Palæontological branch.

All candidates will be expected to show a knowledge of the History of Geological Science, and to possess an intimate acquaintance with the economic aspects of the branch in which they elect to be examined, with special reference to the mineral deposits of India, their exploitation by indigenous methods in the past, and a knowledge of recent developments.

Candidates must produce note-books of their practical work, including field work in which they participated. These must be duly certified by the teacher, and shall be taken into account in estimating their qualifications.

Candidates who have taken their B.Sc. Degree with Honours in this subject shall be allowed to offer a piece of research work in the branch in which they have specialised in lieu of a portion of the examination in the other part, not carrying more than 200 marks.

## EXPERIMENTAL PSYCHOLOGY.

1. The examination shall consist of the following parts:—  
*Theoretical—*

- |  |     |                |
|--|-----|----------------|
| (a) Physiological Psychology                                       | ... | ... One paper. |
| (b) Mental Pathology   | ... | ... One paper. |
| (c) Animal Psychology, with Mental Evolution in the Animal Kingdom | ... | ... One paper. |
| (d) Child Psychology, with Mental Evolution in the Individual      | ... | ... One paper. |

*Practical—*

- |  |     |                |
|--|-----|----------------|
| Experimental Psychology  | ... | ... Four days. |
| (i) Sensation.   |     |                |
| (ii) Perception, Ideation, Association of Ideas, and Attention.                                    |     |                |
| (iii) and (iv) Time-relations of Mental phenomena, affective states and their influence on motion. |     |                |

2. Candidates who have passed the B.Sc. Examination with Honours in Experimental Psychology may offer a piece of research work in (a) or (b) in lieu of examination in (c) and (d) or a piece of research work in (c) or (d) in lieu of examination in (a) and (b).

No candidate shall be excused any portion of the practical examination.

The maximum number of marks assigned to the research work shall be 200.

3. Candidates must produce note-books of their Laboratory work, which shall be duly certified by the Professor, and shall be taken into account in estimating the candidates' qualifications.

### ANTHROPOLOGY.

The course in Anthropology shall include both Physical and Cultural Anthropology. Physical Anthropology shall be studied from the zoological, palæontological, physiological, psychological and ethnological point of view. Cultural anthropology shall be studied from the archæological, technological, sociological linguistic and ethnological point of view. The entire subject shall be treated with special reference to Indian conditions and problems past and present. Candidates shall be expected to possess a general knowledge of such subsidiary subjects as archæology, human anatomy, geography, psychology, zoology, physiology, statistics with special reference to miometries, in so far as such acquaintance is necessary for the proper understanding of anthropology; but they shall not be required to pass a special examination in the subsidiary subjects.

Six theoretical papers of four hours each shall be set at the examination; there will also be an oral and practical examination extending over two days. Each written paper shall carry 100 marks; and 200 marks shall be allotted to the oral and practical examination. In order to pass, a candidate must obtain 216 marks in the aggregate of the written papers, and 72 marks in the oral and practical examination; but if in any written paper, a candidate obtains less than 25 marks, those marks shall not be included in his aggregate. Candidates obtaining 360 marks shall be placed in the second class and those obtaining 480 marks in the first class.

Candidates may be permitted to substitute a piece of research work in lieu of written examination in two papers, provided they possess such qualifications and fulfil such conditions as may, from time to time, be prescribed in this behalf by the Board of Higher Studies concerned.

Detailed syllabuses will be prescribed and books recommended from time to time by the Board of Higher Studies concerned, so as to indicate the extent and standard of knowledge required.

### GENERAL.

8. (a) In order to pass in Mathematics a candidate must obtain 264 marks. No minimum pass marks shall be required in each paper, but if in any paper a candidate obtains less

than 20 marks, those marks shall not be included in his aggregate. Candidates obtaining 320 marks shall be placed in the second class and those obtaining 400 marks in the first class.

(b) In order to pass in any subject other than Mathematics a candidate must obtain 132 marks in the aggregate of the four theoretical papers and 160 marks in the Practical Examination. If in any theoretical paper a candidate obtains less than 25 marks, these marks shall not be included in his aggregate. Candidates obtaining 360 marks shall be placed in the second class and those obtaining 480 marks in the first class.

9. As soon as possible after the examination the Syndicate shall publish a list of candidates who have passed in each subject arranged in three classes and in order of merit. Candidates shall be bracketted together unless the Examiners are of opinion that there is clearly a difference in their merits.

Each successful candidate shall receive with his Degree of M.Sc. a certificate setting forth the subject in which he was examined, and the class in which he was placed.

10. The candidate who is placed first in the first class in each branch shall receive a Gold Medal and a prize of books to the value of Rs. 200, and the candidate who is placed second in the first class in each branch shall receive a Silver Medal and a prize of books to the value of Rs. 100.

11. In all cases where a candidate is allowed to substitute a piece of research work for part of the examination the following conditions shall be observed:—

- (a) He must have completed one year's study including a full course in the subject in which he intends to offer a piece of research work.
- (b) He must at the end of the year in question submit to the Syndicate an application for permission to offer a piece of research work in lieu of part of the examination.
- (c) The application shall indicate the particular piece of research which he wishes to take up and must be recommended by the Professor or Professors under whom he has been working.
- (d) If the application be granted by the Syndicate the research must be carried on under the direction of the Professor or Professors with whom the candidate is prosecuting his studies.
- (e) The candidate shall draw up a complete report of the particular research work done by him and shall deliver this report to the Registrar at least a month before the first day of the M.Sc. Examination at which he intends to present himself.

- (f) The Examiner appointed to consider the research work and to apportion marks for the same shall, if he thinks necessary, subject the candidate to a *viva voce* examination with a view to testing his acquaintance with any previous work that has been done in the particular line of research taken up.
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## CHAPTER XXXVIII.

### DOCTOR OF SCIENCE.

1. Any Master of Science of the University of Calcutta who has been placed in either the first or the second class at the examination for the Degree of Master, may offer himself as a candidate for the Degree of Doctor of Science, provided three years have elapsed from the time when he passed the examination.

2. Every candidate shall state in his application the special subject within the purview of the Regulations for the Degree of Master of Science, upon a knowledge of which he rests his qualification for the Doctorate, and shall, with the application, transmit three copies, printed or type-written, of a thesis that he has composed treating scientifically some special portion of the subject so stated, embodying the result of research, or showing evidence of his own work, whether based on the discovery of new facts observed by himself or of new relations of facts observed by others, or tending generally to the advancement of Science. The candidate shall indicate generally in a preface to his thesis and specially in notes, the sources from which his information is taken, the extent to which he has availed himself of the work of others, and the portions of the thesis which he claims as original; he shall further state whether his research has been conducted independently, under advice, or in co-operation with others, and, in what respects his investigations appear to him to tend to the advancement of Science.

3. Every candidate may also forward with his application three printed copies of any original contribution or contributions to the advancement of the science professed by him, or any cognate branch of science, which may have been published by him independently or conjointly, and upon which he relies in support of his candidature.

4. No application shall be entertained unless two Members of the Faculty of Science, or two Doctors of Science shall have

testified, to the satisfaction of the Syndicate, that in habits and character, the candidate is a fit and proper person for the Degree of Doctor.

5. Every candidate shall forward with his application a fee of Rs. 200. No candidate who fails to pass or present himself for examination shall be entitled to claim a refund of the fee.

6. The thesis mentioned in Regulation 2 and the original contributions, if any, mentioned in Regulation 3, shall be referred by the Syndicate to a Board of three Examiners.

7. If the thesis is approved by the Board, and, if the candidate has obtained a first class at the examination for the Degree of Master of Science, he shall not be required to submit to any further written examination; but he may be required by the Board, at their discretion, to appear before them to be tested orally, or practically, or by both these methods, with reference to the thesis, and the special subject selected by him. The Board shall report to the Syndicate the result of the examination of the thesis, and of the oral and practical examinations, if any; and if the Syndicate, upon the report, consider the candidate worthy of the Degree of Doctor of Science, they shall cause his name to be published, with the subject of his thesis, and the titles of his published contributions (if any) to the advancement of Science.

8. If the candidate is a person who has obtained a second class at the examination for the Degree of Master of Science, and if his thesis is approved by the Board he shall be required to submit to a written examination.

Two papers of three hours each shall be set, one upon the special subject mentioned in the application of the candidate, and the other upon the subject of the thesis. The candidate, may also be required by the Board, at their discretion, to appear before them to be tested orally or practically, or by both these methods, with reference to the thesis and the special subject professed by him. The Board shall report to the Syndicate the result of the examination of thesis, and of the written examination, and also of the oral and practical examinations, if any, and if the Syndicate, upon the report, consider the candidate worthy of the Degree of Doctor of Science they shall cause his name to be published, with the subject of his thesis, and the titles of his published contributions (if any) to the advancement of Science.

9. In the case of a candidate falling under the preceding Regulation, if the Board upon an examination of his thesis and of his original contribution or contributions to the advancement of Science, hold the same to be generally or specifically of such special excellence as to justify the exemption of the candi-



date from the written examination, he may be exempted by the Syndicate, provided that the report of the Board shall set forth the fact and the grounds of such exemption.

10. A diploma under the seal of the University, and signed by the Vice-Chancellor shall be delivered at the next Convocation for conferring Degrees to each candidate who has qualified for the Degree.

11. Every candidate shall be at liberty to publish his thesis, and the thesis of every successful candidate shall be published by the University, with the inscription: "Thesis approved for the Degree of Doctor of Science in the University of Calcutta."

## CHAPTER XXXIX.

### LICENTIATE IN TEACHING.

1. An Examination for Licentiate in Teaching shall be held annually in Calcutta\* at such time as the Syndicate shall determine, the approximate date to be notified in the Calendar.

2. Any candidate may be admitted to the examination not less than two years after passing the Intermediate Examination in Arts or Science, provided he has attended a regular course of lectures† on the Art and Theory of Teaching in a college or colleges affiliated in Teaching, and has, in addition, (a) undergone a course of practical training for a period of six consecutive months at a Training School approved by the Syndicate for the purpose, or (b) served as a Teacher at some recognised school for one academical year previously to the examination. The theoretical portion of the course shall consist of the following subjects:—The Theory and Practice of Teaching in relation to Mental and Moral Science, (2) Methods of teaching specific subjects, and school management, (3) a selected educational classic or classics, and (4) a selected course in modern English, Prose and Poetry.

3. There shall be a written examination in each of the subjects (1), (2), (3) and (4) and a practical examination for testing skill in teaching by means of lessons to be given by the candidate to a class or classes at some recognised school

\* The Examination may also be held in such places other than Calcutta as the Syndicate may appoint from time to time.

† This condition will not be enforced so long as there is no College affiliated for this purpose.

in Calcutta on any three of the following groups of subjects selected by him—

- (i) English.
- (ii) A Classical Language.
- (iii) Bengali.
- (iv) History.
- (v) Mathematics.
- (vi) Geography.
- (vii) Elementary Physics and Chemistry.
- (viii) Elementary Mechanics.
- (ix) Kindergarten and Object Lessons.

4. There shall be one paper in each of the subjects (1), (2), (3) and (4). The paper on (3) shall include an Essay on an Educational subject carrying 50 marks. Each paper shall be of three hours, and shall carry 100 marks. 300 marks shall be allotted to the practical examination. In order to pass, a candidate must obtain 36 marks in each of the subjects (1), (2), (3) and (4), and 120 marks in the practical examination. Candidates obtaining 420 marks shall be declared to have passed with distinction.

A fee of Rs. 30 shall be payable by every candidate. If the candidate fails to pass or present himself at the examination, he shall not be entitled to claim a refund of the fee.

5. No candidate shall be allowed to appear for the practical examination till he has passed in the theoretical portion. A candidate may present himself for examination in the theoretical portion one year after passing the Intermediate Examination in Arts or Science: and if he passes he may appear in the practical portion of the examination in a subsequent year.

6. The limits of the different subjects shall be as follows:—

(I) Theory and Art of Teaching in relation to Mental and Moral Science.

- (a) General Analysis of Mind; fundamental processes and activities with their laws and conditions
- (b) The physical basis of mental life; sensation, perception, attention, memory, association of ideas, assimilation of knowledge, feeling and volition; their associated physical conditions.
- (c) Mental evolution in the individual—characteristics of different ages:—infancy and childhood—the school age, and the succeeding period.
- (d) The training of the senses:—co-ordination of sense and movement.
- (e) The cultivation of attention and interest—the cultivation of the imagination and the emotions—the æsthetic basis of intellectual education.

- (f) The logical basis of education—Logical Method—theory of the five formal steps—abstraction, generalisation and conception—order of the acquisition of knowledge.
- (g) Language, Imitation and Play as factors in education. Growth of the linguistic faculty.
- (h) The training and discipline of the emotions—cultivation of Sympathy and the Social Emotions—of the moral sentiment.
- (i) The training of the will—formation of habits—Rewards and punishments—authority and discipline—the moral standard—the moral idea and moral progress.
- (j) Characters of individual children—marks of brightness and cleverness—marks of deficiency and abnormality—atavism, physical and moral.
- (k) Tests of visualising power, memory, verbal memory, command of language, sense of number, and the computing capacity, with the conditions of their growth and decline.
- (l) Educational values and educational ends, Education: classical and scientific, liberal and technical, general and special. Civic education. Co-ordination and sequence of studies. National systems of education: the primary, the secondary, and the University stage.

(II) Methods of teaching specific subjects, and school management.

Methods:

Special:

Training:—Drawing, drill and active songs, gymnastics and games.

Humanistic studies:—General treatment. Mother tongue. Foreign language, Grammar and Composition, Literature, History.

Naturalistic studies:—General treatment. Object lessons. Elementary Scientific lessons. Every-day Science, Geography, Arithmetic, Geometry and Algebra, Elementary Mechanics, Elementary Physics and Elementary Chemistry.

General:—Co-ordination of particular studies. Preparation of teaching notes and lessons. Use of the blackboard. Questioning and conversations. Oral lessons and book-work. Excursions.

School Management: Organisation of Schools. Co-ordination and sequence of studies. Classification of scholars, various methods of grading pupils. Management of a class. Apportionment of time. The time-table and recreation. Methods of

examination. Registers and returns. Progress reports. Promotions and rewards. Corporal punishment in schools. Discipline and the formation of habits. Relations of teachers to pupils out of school hours. Physical exercise. Hygienic conditions. Experimental study of children, and record of results. Attention to individual children. School buildings—their structure, fitting and furniture. Books and apparatus.

### (III) English.

Books shall be prescribed from time to time by the Syndicate on the recommendation of the Board of Studies in English. The works shall be of the same standard of difficulty as the B.A. Pass English texts.

## CHAPTER XL.

### BACHELOR OF TEACHING.

1. An Examination for the Degree of Bachelor of Teaching shall be held annually in Calcutta\* at such time as the Syndicate shall determine, the approximate date to be notified in the Calendar.

2. Any candidate may be admitted to the examination not less than one year after passing the B.A. or B.Sc. Examination, provided he has attended a regular course of lectures† on the Art, Theory and History of Teaching in a College or Colleges affiliated in Teaching, and has; in addition, either (a) undergone a course of practical training consisting of not less than 50 lessons for a period of six consecutive months at a Training School approved by the Syndicate for the purpose, or (b) served as a Teacher at some recognised school for one academical year previously to the examination. The Theoretical portion of the course shall extend over one academical year, and consist of the following subjects:—(1) The Theory and Practice of teaching in relation to Mental and Moral Science, (2) Methods of teaching specific subjects, and school management, (3) the History of Educational Ideas and Methods, and (4) a selected educational classic or classics.

Any candidate who has passed the examination for the License in Teaching and has also graduated in Arts or in Science

\* The examination may also be held in such places other than Calcutta as the Syndicate may appoint from time to time.

† This condition will not be enforced so long as there is no College affiliated for this purpose.

may be admitted to this examination without compliance with the conditions laid down in the above paragraph.

8. There shall be written examination in each of the subjects (1), (2), (3) and (4) and a practical examination for testing skill in teaching by means of lessons to be given by the candidate to a class or classes at some recognised school at Calcutta on three of the following subjects selected by him:—

- (i) English.
- (ii) A Classical Language.
- (iii) Bengali.
- (iv) History.
- (v) Mathematics.
- (vi) Geography.
- (vii) Elementary Physics and Chemistry.
- (viii) Elementary Mechanics.
- (ix) Kindergarten and Object Lessons.

4. There shall be one paper in each of the subjects (1), (2), (3) and (4). The paper on (4) shall include an Essay on an Educational subject, carrying 50 marks. Each paper shall be of three hours, and carry 100 marks. 300 marks shall be allotted to the practical portion of the examination. In order to pass, a candidate must obtain 36 marks in each of the subjects (1), (2), (3) and (4), and 120 marks in the practical examinations. Candidates obtaining 420 marks shall be placed in the first division.

The first student in the first division shall be entitled to a prize of books of the value of Rs. 100.

5. A candidate may present himself for examination in the theoretical portion in one year, and in the practical portion in a subsequent year, but no candidate shall be admitted to the practical examination, who has not passed the written examination. A fee of Rs. 40 shall be payable by every candidate. If the candidate fails to pass or present himself at the examination, he shall not be entitled to claim a refund of the fee.

6. The limits of the different subjects shall be as follows:—

- (I) The Theory and Art of Teaching. The subjects prescribed for the Licentiate in Teaching treated more fully.
- (II) Methods of teaching specific subjects and School Management. The subjects prescribed for the Licentiate in Teaching treated more fully.
- (III) History of Educational Ideas and Methods.

Oriental:—Ancient and Mediæval Hindu education. Mediæval Mahomedan Education.

Western:—Greek, Roman and Mediæval education. The Renaissance. The Jesuits and the Jansenists. Revolt from classification and return to Nature. Scientific Psy-

chology and the Science of education. Child Psychology and Pedagogics.  
 Outlines of the Organisation and History of national systems of education with special reference to England, Germany, America and Japan.

## CHAPTER XL(A).

### DIPLOMA IN SPOKEN ENGLISH.

1. An examination for a Diploma in Spoken English shall be held annually in Calcutta and shall commence at such time as the Syndicate shall determine, the approximate date to be notified in the Calendar.

2. Every candidate for the Diploma must have passed one of the following examinations in this University:—

Master of Arts.  
 Master of Science.  
 Bachelor of Arts.  
 Bachelor of Science.  
 Bachelor of Teaching.  
 Licentiate in Teaching.

3. Every candidate for the Diploma shall produce certificate to show that he has received training in elocution for a period of not less than one year under a teacher, recognised for this purpose by the Board of Higher Studies in English.

4. Every candidate for admission to the examination shall send his application to the Registrar with a certificate in the form prescribed by the Board of Higher Studies in English, and a fee of Rs. 50, not less than three months before the date fixed for the commencement of the examination.

5. A candidate who fails to pass or present himself for examination, shall not be entitled to claim a refund of the fee. A candidate may be admitted to one or more subsequent examinations on payment of a like fee of Rs. 50 on each occasion.

6. The examination shall be written and oral, and shall be conducted on the lines of a syllabus to be drawn up from time to time by the Board of Higher Studies in English and Board of Studies in English jointly. The Examiners shall be appointed by the Syndicate on the joint recommendation of the Boards.

7. The written examination will consist of one paper and will be held with a view to test a candidate's knowledge of the

elements of phonetics with special reference to the pronunciation of English words.

8. The oral examination will be held mainly with a view to test a candidate's power of elocution and his ability to carry on an ordinary conversation in English.

9. As soon as possible after the examination, the Syndicate shall publish a list of successful candidates, arranged in order of merit, in two classes. Candidates shall be bracketted together unless the Examiners are of opinion that there is clearly a difference in their merits. The candidate who is placed first in the First Class shall receive a gold medal and a prize of books to the value of Rs. 200, the candidate who is placed second in the First Class shall receive a silver medal and a prize of books to the value of Rs. 100.

#### SYLLABUS.

##### *Written Examination (Sec. 7).*

Simple questions will be set on

- (a) The organs of speech,
- (b) The use of the voice (articulation, phrasing, pitch),
- (c) The classification and production of sounds.

Students are recommended to consult the following books:—

- |                    |     |   |
|--------------------|-----|---|
| * D. Macintyre     | ... | Sources and Sounds of the English Language. |
| * H. H. Hulbert    | ... | Voice Training in Speech and Song.          |
| * W. Rippmann      | ... | Sounds of Spoken English.                   |
| * W. Rippmann      | ... | Elements of Phonetics.                      |
| W. Victor          | ... | The Teacher's Manual.                       |
| H. Sweet           | ... | Sounds of English.                          |
| H. Sweet           | ... | Primer of Spoken English.                   |
| Jespersen          | ... | History of English Language, Part I.        |
| * G. Noel Armfield | ... | General Phonetics.                          |

##### *Oral Examination (Sec. 8).*

- (a) Reading—(i) Prose; (ii) Poetry.
- (b) Recitation.
- (c) Conversation.
- (d) A short speech.

100 marks shall be assigned to the written examination; the minimum required for a pass shall be 30 marks.

400 marks shall be assigned to the oral examination; the minimum required for a pass shall be 200 marks.

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\* The more important books in the above list are marked with an asterisk.

No candidate shall be declared to have passed, unless he shall have obtained the prescribed minimum in the written as also in the oral examination.

Candidates who pass and obtain 300 marks in the aggregate shall be placed in the first class.

## CHAPTER XLI.

### BACHELOR OF LAW.

1. Every candidate for the Degree of Bachelor of Law shall satisfy the following conditions :—

- (i) He must have passed the Examination for the Degree of Bachelor of Arts or Bachelor of Science or Bachelor of Commerce or Bachelor of Medicine or Bachelor of Engineering.
- (ii) He must, after passing that Examination, have prosecuted a regular course of study, as explained in Regulation 2, for not less than three academical years in a college affiliated in Law.
- (iii) He must pass three examinations in Law, namely,
  - (a) Preliminary Examination, not earlier than the end of the first-year of law study.
  - (b) Intermediate Examination, not earlier than the end of the second-year of law study.
  - (c) Final Examination, not earlier than the end of the third-year of law study.

Provided that a candidate who has been placed in the First Division at the Preliminary Examination may take the Final Examination in the middle of the third-year of his law study, if during the year and a half which elapses after he has passed the Preliminary Examination, he has attended the full course prescribed for the Intermediate and Final Examinations.

All the three Examinations shall be held six-monthly, but subject to the exception mentioned in Regulation 11, no candidate shall be admitted to the Intermediate Examination until six months after he passes the Preliminary Examination.

2. No candidate shall be considered to have prosecuted a regular course of study unless he has attended—

- (i) at least three-fourths of the full number of lectures in each subject or group of subjects mentioned in Regulation 4 as forming the subject of a separate paper (such full number not being less than 32);
- (ii) at least three-fourths of the full number of sittings of a Moot Court in each of the said subjects or groups of



subjects [other than subjects (i) and (ii) for the Preliminary Examination] (such full number not being less than 12).

3. The Preliminary, Intermediate and Final Examinations shall be written and may also be partly oral.

4. The following shall be the subjects for the Preliminary, Intermediate and Final Examinations, respectively :—

#### FOR THE PRELIMINARY EXAMINATION.

(i) Jurisprudence	...	...	...	One Paper.
(ii) Roman Law	...	...	...	One Paper.
(iii) Hindu Law.*	...	...	...	One Paper.
(iv) Constitutional Law.	...	...	...	One Paper.

#### FOR THE INTERMEDIATE EXAMINATION.

(i) Mahomedan Law	}	...	One Paper.
and			
(ii) The Law relating to Persons	}	...	One Paper.
(iii) The Law relating the Property, including			
(a) the Law of Transfer <i>inter vivos</i>		...	One Paper.
and			
(b) Principles of the English Law of Real Property and the Law of Intestate and Testamentary Succession (exclusive of the Hindu and the Mahomedan Law of Intestate Succession).			One Paper.
(iv) The Law of Contracts and Torts	...		One Paper.

#### FOR THE FINAL EXAMINATION.

(i) The Law relating to Property, including			
(a) The Law of Land Tenures, Land Revenue and Prescription.	...	...	One Paper.
(ii) The Principles of Equity, including the Law of Trusts.			One Paper.
(iii) The Law of Evidence and the general principles of Civil Procedure and Limitation	...		One Paper.
(iv) The Law of Crimes and the General Principles of Criminal Procedure.	...	...	One Paper.

5. The limits of each subject mentioned in the preceding Regulation shall be indicated by the Syndicate from time to

\* Candidates from Burma will be allowed optionally to offer "Burmese Buddhist Law" in place of Hindu Law.

time by reference to text-books, and Legislative Acts and Statutes where necessary. The Syndicate shall also prescribe, in connection with each subject [other than subjects (i) and (ii) for the Preliminary Examination] a list of leading cases to be studied in the original judgments as expositions of important legal principles. Every College affiliated in Law shall make suitable provision for a law library so as to enable its students to have access to the Reports or other books in which the selected cases may be found.

6. A Preliminary Examination, an Intermediate Examination and a Final Examination in Law shall be held six-monthly in Calcutta and in such other places as the Syndicate may, from time to time, determine and shall commence at such time as the Syndicate may fix, the approximate dates to be notified in the Calendar.

7. Any Bachelor of Arts or Bachelor of Science or Bachelor of Commerce or Bachelor of Medicine or Bachelor of Engineering, who has, after passing his Degree Examination, prosecuted a regular course of study as explained in paragraph 2, so far as the subjects for the Preliminary Examination in Law are concerned, may be admitted to that Examination, if he sends to the Registrar his application with a fee of thirty rupees and with a certificate in the form prescribed by the Syndicate, at least thirty days before the date fixed for the commencement of the examination.

A candidate, who fails to pass or present himself for examination, shall not be entitled to obtain a refund of the fee ; but he may be admitted to one or more subsequent examinations on payment of a like fee of thirty rupees.

8. As soon as possible after the Preliminary Examination the Syndicate shall publish a list of the names of the successful candidates arranged in two divisions, the first in order of merit and the second in alphabetical order.

The first student of the first division shall be entitled to a prize of books of the value of Rs. 100, and the second student of the first division shall be entitled to a like prize of Rs. 50.

9. Any student who has passed the Preliminary Examination and has prosecuted a regular course of study as explained in paragraph 2, so far as the subjects for the Intermediate Examination in Law are concerned, may be admitted to that Examination, if he sends to the Registrar his application with a fee of thirty rupees and with a certificate in the form prescribed by the Syndicate, at least thirty days before the date fixed for the commencement of the examination.

- A candidate who fails to pass or present himself for examination shall not be entitled to a refund of the fee ; but he may

be admitted to one or more subsequent examinations on payment of a like fee of thirty rupees.

10. As soon as possible after the Intermediate Examination, the Syndicate shall publish a list of the names of the successful candidates arranged in two divisions, the first in order of merit, and the second in alphabetical order.

The first student of the first division shall be entitled to a prize of books of the value of Rs. 100, and the second student of the first division shall be entitled to a like prize of Rs. 50.

11. A student may during the second year of his Law study, prosecute a regular course of study as explained in paragraph 2, in the subjects for the Intermediate Examination, notwithstanding that he has not already passed the Preliminary Examination. And no student shall be debarred from prosecuting such regular course of study, in the subjects for the Final Examination in the third year of his Law study, by reason of his failing to pass or present himself for the Preliminary Examination at the end of the first year or the Intermediate Examination at the end of the second year. But no one who is not a Master of Arts or Science shall be admitted to the Intermediate Examination until six months after his passing the Preliminary Examination.

12. Any Bachelor of Arts or Bachelor of Science or Bachelor of Commerce or Bachelor of Medicine or Bachelor of Engineering, who has after passing his Degree Examination, prosecuted a regular course of study as explained in Regulation 2, for three years or two years and a half, as the case may be, and has passed the Preliminary Examination, may be admitted to the Final Examination in Law, if he sends his application with a fee of thirty rupees and with certificates in the form prescribed by the Syndicate, to the Registrar, at least thirty days before the date fixed for the commencement of the examination.

Provided that if such candidate has not previously passed the Intermediate Examination, he must at the same time appear at the Intermediate Examination in accordance with paragraph 9.

And any one who has prosecuted a regular course of study as abovementioned, and who, as a Master of Arts or Science, is entitled under the exception in paragraph 11 to present himself for the Preliminary, Intermediate and Final Examinations in the same year, may be admitted at the same time to the three examinations, if he sends his applications with the prescribed fees and with certificates in the prescribed forms to the Registrar, at least thirty days before the date fixed for the commencement of the earliest of these examinations.

A candidate under any of the preceding paragraphs who fails to pass or present himself for examination shall not be entitled to obtain a refund of the fee; but he may be admitted to one or more subsequent examinations on payment of the prescribed fee.

13. As soon as possible after the Final Examination, the Syndicate shall publish a list of the names of the successful candidates arranged in two divisions, each in order of merit. The first student of the first division shall be entitled to a Gold Medal and a prize of books to the value of Rs. 200, provided that he was placed in the first division also at either the Preliminary or the Intermediate Examination.

14. If a candidate who is admitted to the Intermediate and Final Examinations at the same time, succeeds in the former and fails in the latter, he shall be declared to have passed the Intermediate Examination, and he may be admitted to any subsequent Final Examination on payment of the prescribed fee. But if he succeeds in the Final Examination and fails in the Intermediate Examination, he shall be deemed to have failed in both and he may be subsequently admitted to the two examinations at the same time on payment of the prescribed fees.

If a candidate who is a Master of Arts or Science and is admitted as such to the Preliminary; Intermediate and Final Examinations at the same time, he shall be declared to have passed the examination or examinations in which he succeeds, provided that he shall not be declared to have passed the Intermediate Examination, unless he has passed the Preliminary Examination as well, nor shall he be declared to have passed the Final Examination unless he has passed both the Preliminary and Intermediate Examinations. In the event of failure he may be admitted to one, two or three of these Examinations, as the case may be, at the same time on payment of the prescribed fees.

15. For the Preliminary Examination four papers shall be set each of four hours and carrying 100 marks.

For the Intermediate Examination four papers shall be set each of three hours and carrying 100 marks.

For the Final Examination four papers shall be set each of three hours and carrying 100 marks.

16. In the third paper for the Preliminary Examination and in every paper for the Intermediate and Final Examinations, 40 marks shall be allotted to questions framed with a view to test the ability of candidates to apply the more important legal principles to concrete cases. Full credit shall be given for well reasoned answers to such questions, even if the conclusions happen to differ from the views taken in decided cases. No credit shall be given for bare answers unsupported by arguments.

17. In order to pass the Preliminary Examination, a candidate must obtain—

In each paper	...	...	...	30 marks.
and in the aggregate	...	...	...	200 marks.

In order to be placed in the first division a candidate must obtain—	...	...	...	267 marks.
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18. In order to pass the Intermediate Examination,\* a candidate must obtain—

In each paper	...	...	...	30 marks.
and in the aggregate	...	...	...	200 marks.

In order to be placed in the first division, a candidate must obtain—	...	...	...	267 marks.
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19. In order to pass the Final Examination, a candidate must obtain—

In each paper	...	...	...	30 marks.
and in the aggregate	...	...	...	200 marks.

In order to be placed in the first division, a candidate must obtain—	...	...	...	267 marks.
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20. Any candidate who has failed in one paper only at any of the three examinations, and by not more than 5 marks, and has shown merit by gaining 60 per cent. or more in the aggregate of the marks of the examination, shall be allowed to pass. In order to determine the division in which such a candidate shall be placed and his place in the division, the number of marks by which he has failed in one paper shall be deducted from his aggregate.

If the Examiners are of opinion that in the case of any candidate at any of these examinations not covered by the preceding Regulation, consideration ought to be allowed by reason of his high proficiency in a particular subject or in the aggregate, they shall report the case to the Syndicate, and the Syndicate may pass such candidate.

21. Each successful candidate at the Preliminary and the Intermediate Examinations shall receive a certificate in the form entered in Appendix A.

Each successful candidate at the Final Examination shall receive with his Degree of B.L. a diploma in the form entered in Appendix A, setting forth the division in which he was placed.

22. For the purpose of Section 11 of Chap. XXVI of the Regulations a student shall be deemed to have completed his regular course of study (a) for the Preliminary Examination at the end of the first year of his Law study ; and (b) for both the Intermediate and the Final Examinations, at the end of the third year of his Law study.

23. The Regulations contained in this Chapter shall come into force on the 1st June, 1910, and shall apply to all students who commence their Law study on or after that date.

A student who commenced his Law study before 1st June, 1910, will be entitled to complete the course in accordance with the Regulations as they stood before that date. Any student, who has thus completed the course, may appear, if otherwise qualified, at any of the Examinations held in accordance with the Regulations contained in this Chapter.

24. The Examinations in accordance with the Regulations contained in this Chapter shall be held for the first time as follows :—

Preliminary Examination	...	... July, 1911.
Intermediate Examination	...	... July, 1912.
Final Examination	...	... January, 1913.

The Examinations in accordance with the Regulations as they stood before 1st June, 1910, shall be held for the last time as follows :—

Preliminary Examination	...	... January, 1911.
Final Examination	...	... July, 1911.

In January and July, 1912, in lieu of a Final Examination under the old Regulations, an Intermediate and a Final Examination will be held in accordance with the new Regulations, to which will be admitted only such candidates as would have been entitled to appear at a Final Examination under the old Regulations at that time.

Provided that notwithstanding any thing contained in Section 11 of Chap. XXVI of the Regulations, any student who has completed a two years' course of Law study under the old Regulations, will retain the benefit of his attendance at lectures as qualifying him for admission to the Final Examination under the old Regulations or the Intermediate and the Final Examinations under the new Regulations, for a period of *two years* following the completion of his regular course of study.

## CHAPTER XLII.

### MASTER OF LAW.

1. An Examination for the Degree of Master of Law shall be held annually in Calcutta, commencing at such time as the Syndicate shall determine, the approximate date to be notified in the Calendar.

2. Any candidate who has obtained the Degree of Bachelor of Law may be examined for the Degree of Master of Law.

3. Every candidate shall send his application with a fee of two hundred rupees to the Registrar at least three months before the date fixed for the commencement of the examination. A candidate who fails to pass or present himself for examination shall not be entitled to claim a refund of the fee.

4. Every candidate shall be examined in the following subjects:—

- (1) Hindu Law or Mahomedan Law.
- (2) Jurisprudence and Principles of Legislation.
- (3) Principles and History of Roman Law.
- (4) Private International Law.
- (5) and (6) Any two of the following subjects, namely:—
  - (i) Principles of Equity.
  - (ii) The Law relating to the Transfer of Immovable Property and the Law of Prescription.
  - (iii) The Law relating to Wills.
  - (iv) The Law of Contracts and Torts.
  - (v) Principles and History of the Law of Real and Personal Property
  - (vi) Principles and History of the Law of Evidence.
  - (vii) History of English Law.

5. Six papers shall be set to each candidate, one on each of the six subjects. Each paper shall be of three hours and shall carry 100 marks.

There shall be a *viva voce* examination of each candidate, if the Examiners think fit.

6. As soon as possible after the examination, the Syndicate shall publish a list of the candidates who have passed, arranged in two classes, each in order of merit. Candidates shall be bracketted together, unless the Examiners are of opinion that there is clearly a difference in their merits.

7. Each successful candidate shall receive with his Degree of M. L. a diploma in the form entered in Appendix A, setting forth the class in which he was placed. The candidate who is placed first in the first class shall receive a Gold Medal and a prize of books to the value of Rs. 200.

8. In order to pass the examination for the Degree of Master of Law, a candidate must obtain—

In each paper	...	...	...	50 marks.
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In order to be placed in the first class, a candidate must further obtain—

In the aggregate	...	...	...	400 marks.
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9. The Examiners shall have regard to the style and method of the answers submitted by the candidates, and shall give credit for excellence in these respects.

## CHAPTER XLIII.

### DOCTOR OF LAW.

1. Any Master of Law of the University of Calcutta may offer himself as a candidate for the Degree of Doctor of Law, provided one year has elapsed from the time when he passed the examination for the Degree of Master.

2. Every candidate shall state in his application the special subject within the purview of the Regulations for the Degree of Master of Law, upon a knowledge of which he rests his qualification for the Doctorate, and shall, with the application, transmit three copies, printed or type-written, of a thesis that he has composed upon some branch of law, or of the history or philosophy of law. The candidate shall indicate generally in a preface to his thesis and specially in notes, the sources from which his information is taken, the extent to which he has availed himself of the work of others, and the portions of the thesis which he claims as original; he shall further state whether his research has been conducted independently, under advice, or in co-operation with others, and, in what respects his investigations appear to him to advance the study of law.

3. Every candidate may also forward with his application three printed copies of any original contribution or contributions to the advancement of the science or study of law whether published conjointly or independently and upon which he relies in support of his candidature.

4. No application shall be entertained unless two members of the Faculty of Law or two Doctors of Law shall have testified, to the satisfaction of the Syndicate, that since graduating as Bachelor of Law, the candidate has practised his profession with repute for five years, and that in habits and character, he is a fit and proper person for the Degree of Doctor.

5. Every candidate shall forward with his application a fee of Rs. 200. No candidate who fails to pass or present himself for examination shall be entitled to claim a refund of the fee.

6. The thesis mentioned in Regulation 2 and the original contributions, if any, mentioned in paragraph 3, shall be referred by the Syndicate to a Board consisting of the Dean of the Faculty of Law and two other persons.



7. If the thesis is approved by the Board, and if the candidate has obtained a first class at the examination for the Degree of Master of Law, he shall not be required to submit to any further written examination; but he may be required by the Board, at their discretion, to appear before them to be tested orally with reference to the thesis, and the special subject selected by him. The Board shall report to the Syndicate the result of the examination of the thesis, and of the oral examination, if any; and if the Syndicate, upon the report, consider the candidate worthy of the Degree of Doctor of Law, they shall cause his name to be published, with the subject of his thesis, and the titles of his published contributions (if any) to the advancement of the science or study of Law.

8. If the candidate is a person who has obtained a second class at the examination for the Degree of Master of Law, and if his thesis is approved by the Board, he shall be required to submit to a written examination.

Two papers of three hours each shall be set, one upon the special subject mentioned in the application of the candidate, and the other upon the subject of the thesis. The candidate may also be required by the Board, at their discretion, to appear before them to be tested orally with reference to the thesis and the special subject professed by him. The Board shall report to the Syndicate the result of the examination of the thesis, and of the written examination, and also of the oral examination, if any; and if the Syndicate, upon the report, consider the candidate worthy of the Degree of Doctor of Law, they shall cause his name to be published, with the subject of his thesis, and the titles of the published contributions (if any) to the advancement of the science or study of Law.

9. In the case of a candidate falling under the preceding Regulation, if the Board, upon an examination of his thesis and of his original contribution or contributions to the advancement of the science or study of Law, hold the same to the generally or specifically of such special excellence as to justify the exemption of the candidate from the written examination, he may be so exempted by the Syndicate, provided that the report of the Board shall set forth the fact and the grounds of such exemption.

10. A diploma under the seal of the University, and signed by the Vice-Chancellor shall be delivered at the next Convocation for conferring Degrees to each candidate who has qualified for the Degree.

11. Every candidate shall be at liberty to publish his thesis and the thesis of every successful candidate shall be published by the University with the inscription : " Thesis approved for the Degree of Doctor of Law in the University of Calcutta."

## CHAPTER XLIV.

## PRELIMINARY SCIENTIFIC M.B. EXAMINATION.

1. Any undergraduate of the University may be admitted to this examination provided he has fulfilled the following conditions:—

(a) That he has passed the Intermediate Examination with Physics, Chemistry and Mathematics.

(b) That he has completed, since passing the Intermediate Examination with Physics, Chemistry and Mathematics, a regular course of study, theoretical and practical, in the subjects for the examination for one academical year in a College affiliated to the University for this purpose.

2. The Preliminary Scientific M.B. Examination shall be held twice in each year ordinarily in April and November and shall commence on such dates as the Syndicate shall determine. Every candidate for admission to this examination shall send to the Registrar his application with a certificate in the form prescribed by the Syndicate and a fee of Rs. 30, at least twenty-one days before the date fixed for the commencement of the examination. A candidate who fails to pass or present himself for examination shall not be entitled to claim a refund of the fee. A candidate may be admitted to one or more subsequent examinations on payment of a like fee of thirty rupees on each occasion on producing a certificate that he has, since the date of last examination and within the six months preceding his re-examination, attended, to the satisfaction of the Principal of his College, a further course of study in each of the subjects in which he has to appear at that examination, provided that after four failures within two years, he shall not be admitted to the examination except on the special recommendation of the Principal of the College.

3. Every candidate shall be examined in the following subjects:—Inorganic Chemistry, Organic Chemistry, Physics, Botany and Zoology (one paper in each). The examination shall be written, oral and practical, three hours being allowed for each paper in each subject.

4. As soon as possible after the examination, the Syndicate shall publish a list of successful candidates arranged in alphabetical order. Every candidate shall on passing receive a certificate in the form entered in Appendix A.

5. The course of study for the Preliminary Scientific M.B. Examination shall be

## INORGANIC CHEMISTRY

## THEORETICAL.

The elements and compounds, the laws of chemical action, Dalton's Theory, Avogadro's hypothesis and Periodic Law. The

general principles and application of Thermo Chemistry, Ionic Theory, H-ion Concentration, Solutions, Mass Action, Reversible Reactions. Allotropy. Catalysis.

Calculations relating to weight and volume and formula.

Alkalimetry and Acidimetry.

Oxygen, Ozone, Hydrogen, Water, Hydrogen peroxide, Nitrogen, Nitric Acid, Nitrous oxide, Nitrates and nitrites, Hydrazine and Hydroxyl amine, Ammonia and its salts, Air, Carbon and its oxides, Coal, Coal gas and Carbon disulphide.

- The halogens and their important compounds.

Sulphur and its important compounds.

Phosphorus and its important compounds.

Boron, Boric acid and Borax.

Silicon, Silica, Silicic acid, Dialysis, Colloids and Crystalloids.

Sources, excluding all metallurgical processes and properties of the following metals and metalloids and the properties and preparation of their compounds used in medicine:—

Arsenic, Antimony, Bismuth, Tin, Silver, Mercury, Copper, Lead, Iron, Manganese, Chromium, Zinc, Magnesium, Calcium, Barium, Sodium, Potassium, Lithium and Radium.

During the above course the common laboratory processes, such as, mixture, solution, crystallisation, dissociation, distillation, electrolysis, evaporation, precipitation, decantation, syphon, desiccation, decomposition, separation, oxidation, reduction and neutralisation should be demonstrated.

The whole course of theoretical Chemistry will be treated in an elementary way and, as far as possible, experimentally with special reference to the needs of medical students.

The above course should be finished with a minimum of 25 lectures of one hour each.

### PRACTICAL.

Uses of Chemical apparatus, such as, burettes, pipettes, measuring cylinders, sand-baths, air-baths, water-baths, oil-baths, etc.

Qualitative analysis of a simple salt containing one basic and one acid radical.

Detection of common impurities in chemicals, such as, chlorine in hydrochloric acid, lead in sulphuric acid, arsenic in medicinal preparations, iodine in Potassium iodide and mercuric chloride in calomel, etc.

• Preparation of standard solutions. Alkalimetry and Acidimetry.

Estimation of chlorides in drinking water.

The above practical course should be finished with a minimum of 20 lectures of 2 hours each.

## ORGANIC CHEMISTRY

### THEORETICAL.

Definition and recognition of organic compounds.

Isolation and preparation of pure organic compounds.

Criteria of purity. Determination of melting and boiling points.

Composition of organic compounds. Elementary detection of the elements—Carbon, Hydrogen, Nitrogen, Sulphur, Phosphorus, and the Halogens. Quantitative analysis. Calculation of results, Determination of molecular weights. Isomerism, Metamerism, Polymerism, Stereoisomerism.

Hydrocarbons. Saturated (Methane, Ethane).

Unsaturated series. (Ethylene and Acetylene), Halogen derivatives of the hydrocarbons (Chloroform, Carbon tetrachloride, Iodoform). Alcohols—saturated and unsaturated series. (Methyl, Ethyl, Amyl, Glycerolalyl). Alcoholometry. Ethers (Ethyl ether).

Mercaptans and Sulphides (Ethyl mercaptan, Ethyl sulphide).

Aldehydes. (Formaldehyde, acetaldehyde, chloral).

Ketones (Acetone).

Fatty acids, saturated and unsaturated. (Formic, Acetic, lactic, butyric, palmitic, stearic and oleic acids).

Oxalic, Tartaric and Citric acids.

Acetyl chloride, acetic anhydride.

Esters (Acetic ether and amyl nitrite).

Amines. Amides, the amino acids (ethyl amine, acetamide, glycine,—alanine, leucine, tyrosine).

Fats, oils and waxes, especially those relating to foodstuffs and medicine. Hydrogenation of fats. Saponification. •

Carbohydrates. Their optical activity and classification (Glucose, fructose, glycuronic acid, Cane sugar, maltose, lactose, starch, dextrin, Glycogen, cellulose).

General properties of gums and resins.

Glucosides. Digitalin, Strophanthin, Amygdalin, Salicin.

Cyanogen. Cyanides.

Purines, (Uric acid, Caffeine, Urea).

Aromatic Compounds. Sources, preparation and properties of Benzene. Toluene, Benzene sulphonic acid, Nitrobenzene, Aniline, Benzylalcohol, Benzaldehyde, Benzoic acid. Phenol, Resorcinol, Salicylic acid. Pyrogallie acid, gallic and tannic acids, Picric acid, Naphthalene, Pyridine.

**Vegetable alkaloids.** The classification, source, extraction, general and special tests of Nicotine, Atropine, Cocaine, Cinchonine, Quinine, Strychnine, Brucine, Morphine, Codeine, Aconitine.

Study of a few simple synthetic drugs. Aspirin (acetyl salicylic acid). Antipyrin. Sulphonal.

The whole course of theoretical Chemistry will be treated in an elementary way and, as far as possible, experimentally with special reference to the needs of medical students.

The above course should be finished with a minimum of 30 lectures of one hour each.

### PRACTICAL.

This will consist of a course of practical demonstrations and where feasible individual work by the student on—

Qualitative tests of C, H, N, S, P, and the Halogens in organic compounds.

General reactions and tests for Methyl alcohol, ethyl alcohol, glycerol, chloral, ethyl ether, formaldehyde, acetaldehyde, acetone, chloroform, carbon tetrachloride, iodoform, potassium cyanide. Saponification.

Reactions and qualitative tests for glucose, sucrose, lactose, starch, dextrin, urea, uric acid, phenol, lactic, salicylic, acetic, formic, citric, tartaric, oxalic, gallic, tannic and benzoic acids.

Tests for the alkaloids and also for opium.

The above practical course should be finished with a minimum of 20 lectures of two hours each.

### PHYSICS

#### THEORETICAL.

**General Physics.** Units of Measurement. Balance—Adjustments, weighing by the method of oscillations, Double weighing. Specific gravity—determination of solids and liquids. Barometers—Fortin's, Aneroid. Manometers—Different types. Surface tension and Capillarity. Diffusion, Dialysis, Osmosis—Isotonic solutions. Viscosity, Denning—Watson Viscosimeter.

**Sound.** Musical notes and noises. Pitch, Intensity and Quality. Laws of vibrations of a stretched String. The Ear, the Larynx, Human Voice, Vowel qualities, Defects of speech.

**Heat.** Thermometry, Heat of combustion, Determination. Fusion, Laws of—Melting point determination of solids. Eva-

poration and Ebullition. Determination of boiling points of liquids and solutions. Hygrometry.

Light. Refraction, Laws of Refraction through a plate. Refractive index determination by the microscope. Refraction through a prism. Refractive Index of the material of a prism, Refractive index by total reflection. Lens. Image formation. Power. Determination of powers of concave and convex lenses. Thick lenses, Focal length determination of thick lens. Spectroscope—Direct Vision Spectroscope. Spectrum analysis. Absorption and Emission Spectra. Microscope. Parts and functions. Use and care of. Magnifying power determination. Objectives and Eye-pieces. Immersion Objectives. Various uses of a microscope. Dark ground illumination. Camera lucida. Abbe's Camera. Spherical and chromatic aberrations. Eye, parts and function. Vision, Optical illusions. Defects of the eye. Double Refraction. Polarisation by double refraction. Construction of Nicol's prism. Double image micrometer. Identification of doubly refracting substances. Saccharimeter.

Electricity. Cells—constant and standard. Ohm's Law, Ampere, Volt and Ohm, Shunts. Galvanometers—Current measurement. Resistance measurement—Wheatstone Bridge. P. O. Box. E.M.F. measurement by the Potentiometer. pH measurement by the Potentiometer. Faraday's laws of electrolysis—Ions, Ionic velocity, Conductivity of Electrolytes, Molecular conductivity. Voltmeters, Secondary Batteries. Joule's Law. Thermo-electric thermometers. Faradism—Lenz's Law. Ruhmkorff's Induction Coil—Interruptors, Rectifiers. Magneto-electric Machine. X-rays, Focus tubes, their properties. Radium and its properties— $\alpha, \beta, \gamma$  Rays. High frequency currents.

The above course should be finished with a minimum of 50 lectures of one hour each.

The whole course of theoretical physics will be treated in an elementary way and, as far as possible, experimentally with special reference to the needs of medical students.

#### PRACTICAL.

Specific gravity determination of solids and liquids, by Balance, by the Specific gravity flask, and by Hydrometers. Specific heat of a liquid by the method of cooling.

Melting point determination of solids.

Boiling point determination of liquids.

Humidity determination with a Dew-point hygrometer, Dry and wet bulb thermometers.\*

Refractive index determination of solids and liquids by the microscope.

Curvature determination of concave and convex mirrors by optical methods and by the spherometer.

Determination of the Refractive index of a prism.

Focal length determination of convex and concave lenses.

Resistance measurement by the Metre Bridge, and by P. O.

Box. E.M.F. determination by the Potentiometer.

Comparison of currents by a Galvanometer.

Use of the following apparatus:—

Micrometer, Screw Gauge, Callipers, Spherometer, Cover glass tester, Urinometer, Barometer, Hypsometer, Microscope, Spectroscope, Induction Coil, Magneto electric machine and X-ray apparatus.

The above practical course should be finished with a minimum of 30 lectures of two hours each.

## BOTANY

### THEORETICAL.

Botany and its subdivisions.

The structure of a vegetable cell, cell division, cell contents and their micro-reactions. Tissues and tissue systems.

The morphology and histology of Angiosperm. The morphology and germination of seed. The morphology and histology of the root, stem and leaf. The morphology of flowers. Inflorescence. Fruit.

The life history of Angiosperm.

The structure and life history of Spirogyra, Ulothrix, Voucheria, Mucor, Pythium, Yeast, Bacterium, Marchantia, Funaria, Fern, Lycopodium, Selaginella and Pine.

Reproduction, sexual, asexual and vegetative, Parthenogenesis.

Elementary plant physiology. Absorption, ascent of sap. Transpiration, assimilation, metabolism, respiration, growth, irritabilities and movements. Pollination and fertilization.

Elementary facts of ecology illustrated by local flora.

Phenomena of saprophytism as illustrated by Mucor, and parasitism as illustrated by Pythium.

Elementary facts relating to evolution, heredity, variation and natural selection.

General principles of classification. A knowledge of 12 Natural orders to be selected from time to time from the following:

Cruciferae, Leguminosae, Rutaceae, Anacardaceae, Myrtaceae, Cucurbitaceae, Compositae, Plumbaginaceae, Asclepiadaceae, Apocynaceae, Convolvulaceae, Solanaceae, Labiatae, Amarantaceae, Urticaceae, Euphorbiaceae, Scitamineae, Dioscoraceae, Palmaceae, Liliaceae, Cyperaceae and Graminaceae.

The above course should be finished with a minimum of 25 lectures of one hour each.

## PRACTICAL.

A knowledge of the use of the microscope.

Candidates shall be required to examine microscopically the plants and the parts of plants included in the syllabus, to dissect and examine the parts of flowers and to describe a flowering plant in simple botanical terms.

Candidates should have knowledge of simple staining and mounting.

Candidates shall be able to determine the Natural order, included in the syllabus.

**Candidates shall have note books of their laboratory work duly signed by the Professor.**

The whole subject shall be treated in an elementary manner.

The above practical course should be finished with a minimum of 30 lectures of two hours each.

## ZOOLOGY

### THEORETICAL.

Nature of the living matter. Difference between the living and non-living. Protoplasm, its physical and chemical nature. Functions of protoplasm: nutrition and growth, metabolism, respiration, excretion and reproduction. Difference between animals and plants.

Zoology, its different branches and relation to Medical Science. The structure of an animal cell and its essential characters and contents. Cell-division. Reproduction.

A general survey of the animal kingdom. The principal characters of the Protozoa and its main sub-divisions. Conjugations in Protozoa. The morphology and life history of Amoeba, Paramoecium, Vorticella and Monocystis. Short descriptions of Volvox, Trypanosoma, Leishmania and Plasmodium; and on Entamoebae and common intestinal Flagellates of man generally found in Bengal.

General characters of Metazoa. Sexual and asexual reproduction, Parthenogenesis. Comparison between Coelenterata and Coelomata. Functions and Development of Coelenteron and Coelome. Principal animal tissues.

The main characters of Phylum Porifera (sponges). General characters of Coelenterata. Structure and life history of Hydra. Outline of the life history of Obelia to illustrate alternation of generation. Short descriptions of Sea-anemone and coral-formation.

The main characters of Platyhelminthes and its principal sub-divisions. Short life histories of the trematode and cestode parasites of man commonly found in Bengal.



The main characters of Phylum Nematelminthes. Short descriptions of nematode parasites of man as commonly found in Bengal.

The main characters of Phylum Chaetopoda (Annelida) and of its principal sub-divisions. The anatomy and life history of the earthworm and leech. Short description of the medicinal leech and its use.

The general characters of Phylum Arthropoda and of its main sub-divisions.

The anatomy and life history of freshwater prawn (*Palaemon*). Short description of Cyclops and Crabs.

The anatomy and life history of Cockroach. Short descriptions of the mosquitoes (*Culex* and *Anopheles*), fleas, bug and *Phlebotomus*.

Short descriptions of common centipede (*Scolopendra*) and scorpion with their stinging mechanisms. Short descriptions of the common ticks.

Comparison between Chaetopoda and Arthropoda and between Crustacea and Hexapoda.

General characters of Mollusca. The anatomy and life history of the freshwater mussel. Short descriptions of the pond snail and sepia.

General characters of Echinodermata.

General characters of Chordata and of its main sub-divisions.

General descriptions of the skeleton, nervous system, sense-organ and urino-genital system of the Craniata.

The anatomy of Bhakti or Rahu. Short notes on an Elasmobranch.

The anatomy of frog or toad. Metamorphosis of frog.

Short descriptions of the poisonous apparatus of the snake including its biting mechanism. Distinction between poisonous and non-poisonous snakes.

The anatomy of the guinea-pig with comparative notes on human anatomy.

The elements of Vertebrate Embryology with special references to (a) Cleavage and origin of germinal layers in *Gallus* and *Lepus*, (b) Formation of the foetal membranes in *Gallus* and *Lepus* and (c) the outlines of organogeny in *Gallus* as far as the end of the third day of incubation. Formation of the Placenta of the rabbit.

Elementary facts on the geographical and geological distribution of animals.

Outlines of the evidence and doctrine of Evolution. Mendel's law. Principles of genetics.

The above course should be finished with a minimum of 25 lectures of one hour each.

**PRACTICAL.**

A knowledge of the use of microscope.

A general acquaintance with the tissues of the animal body. Microscopic examination of *Amoeba*, *Paramoecium*, *Vorticella*, *Monocystis* and *Hydra*.

Dissection and detailed examination of the structure of the following animals: earthworm, leech, freshwater prawn, cockroach, *Lamelliden*, Lates or ruhu, toad and guinea pig. Microscopic examination of the tissues and principal organs of these animals.

A general acquaintance with the animals mentioned in the syllabus.

The whole subject shall be treated in an elementary manner.

The above practical course should be finished with a minimum of 30 lectures of two hours each.

**N. B.**—The candidates should have note books of their laboratory work, which must be duly signed by the Professor.

6. Exemption may be granted in respect of the Preliminary Scientific M. B. Examination as follows: Bachelors of Science who have passed in Physics, Chemistry, Botany or Zoology at the B.Sc. Examination will be excused attendance at lectures and practical work as also the theoretical and practical Examinations in such subject or subjects.

7. The full marks for each subject and the minimum marks required for passing shall be as follows:—

	Written.	Oral.	Practical.	Total marks.	Passing marks.	Passing marks in Practical.
Chemistry (Inorganic).	200	100	100	400	160	40
Chemistry (Organic)	200	100	100	400	160	40
Physics ...	200	100	100	400	160	40
Botany ...	200	100	100	400	160	40
Zoology ...	200	100	100	400	160	40

## CHAPTER XLV.

## FIRST M.B. EXAMINATION.

1. Any undergraduate of the University who has fulfilled the following conditions may be admitted to the examination:—

(a) That he has passed the Preliminary Scientific M.B. Examination.

(b) That he has subsequently to passing the Preliminary Scientific M.B. Examination or the B.Sc. Examination in Physics, Chemistry, Botany and Zoology, attended a regular course of study, theoretical and practical, in the subjects of the examination for not less than two years at a College of Medicine affiliated to the University up to the standard of the First M.B. Examination.

2. The first M.B. Examination shall be held twice in each year ordinarily in April and November and shall commence on such dates as the Syndicate shall determine. Every candidate for admission to this examination shall send to the Registrar his application with a certificate in the form prescribed by the Syndicate and a fee of Rs. 30 at least twenty-one days before the date fixed for the commencement of the examination. A candidate who fails to pass or present himself for examination shall not be entitled to claim a refund of the fee. A candidate may be admitted to one or more subsequent examinations on payment of a like fee of thirty rupees on each occasion, on producing a certificate that he has, since the date of last examination and within the six months preceding his re-examination, attended to the satisfaction of the Principal of his College, a further course of study in each of the subject in which he has to appear at that examination, provided that after four failures within two years, he shall not be admitted to the examination except on the special recommendation of the Principal of the College.

3. Every candidate shall be examined in the following subjects:—Anatomy and Physiology.

The examination shall be written, oral, and practical, three hours being allowed for each paper.

In assessing marks examiners should take into account the duly attested records of the work done by the candidate.

The examination in Anatomy shall consist of

(a) Two theoretical papers.

(b) Dissections.

(c) An oral examination.

The examination in Physiology shall consist of

(a) Two theoretical papers.

(b) A practical examination.

(c) An oral examination.

4. As soon as possible after the examination, the Syndicate shall publish a list of successful candidates arranged in alphabetical order. Every candidate shall on passing receive a certificate in the form entered in Appendix A. Candidates who obtain at least 75 per cent. of marks, in any subject, shall be deemed to have passed with honours in that subject.

On the recommendation of the examiners a gold medal may be awarded to the candidate who has most distinguished himself.

5. The course of study for the First M.B. Examination shall be as follows:—

#### ANATOMY.

(1) A complete course of Human Anatomy, including Histology and Elements of Human Embryology.

(2) A course of dissection of the entire body.

(3) A course of demonstration on surface marking.

#### PHYSIOLOGY.

(1) A theoretical course of lectures on Physiology including instruction in Bio-Physics, Bio-Chemistry and Physiological Chemistry.

(2) A practical course of experimental Physiology.

(3) A practical course of normal Histology.

(4) A practical course of Chemical Physiology.

#### MATERIA MEDICA AND PHARMACY.

A course of instruction in the above subject may be given in the Third-year but the examination in that subject shall be taken along with that of Pharmacology at the end of the Fourth-year.

6. The full marks for each subject and the minimum marks required for passing shall be as follows:—

	Written.	Oral.	Practical.	Total.	Passing marks.	Passing marks in W. & O.	Passing marks in Prac.
Anatomy	500	200	300	1,000	500	280	150
Physiology	500	200	300	1,000	500	280	150

## CHAPTER XLV (A).

## SECOND M.B. EXAMINATION.

1. Any candidate who fulfils the following conditions may be admitted to this examination:—

(a) That he has passed the First M.B. Examination at least one year previously.

(b) That he has subsequently to passing the First M.B. Examination completed a regular course of study, theoretical and practical, in the subjects of the examination for not less than a year, at a College of Medicine affiliated to the University up to the standard for the Second M.B. Examination.

2. The Second M.B. Examination shall be held twice in each year ordinarily in April and November and shall commence on such dates as the Syndicate shall determine. Every candidate for admission to the examination shall send to the Registrar his application, with a certificate in the form prescribed by the Syndicate and a fee of Rs. 25 at least twenty-one days before the date fixed for the commencement of the examination. A candidate who fails to pass or present himself for examination shall not be entitled to claim a refund of the fee, but may be admitted to one or more subsequent examinations on payment of the prescribed fee on each occasion on producing a certificate that he has since the date of the last examination and within the six months preceding his re-examination attended to the satisfaction of the Principal of his College, a further course of study in each of the subjects in which he has to appear at that examination, provided that after four failures within two years, he shall not be admitted to the examination except on the special recommendation of the Principal.

3. Every candidate shall be examined in the following subjects:—(1) Pharmacology and Materia Medica, including Pharmacological Chemistry and Pharmacy, (2) Elementary Bacteriology and Pathology.

The examination shall be written, oral, and Practical. Three hours shall be allowed for each paper in each subject.

In assessing marks in Pathology, examiners should take into account the duly attested records of the work done by the candidate.

The examination in Pharmacology and Materia Medica shall consist of

- (a) One theoretical paper.
- (b) A practical examination in Pharmacological Chemistry and Pharmacy.
- (c) An oral examination.

The examination in Elementary Bacteriology and Pathology shall consist of

- (a) One theoretical paper.
- (b) A practical examination within the scope of the syllabus.
- (c) An oral examination including questions on macroscopic and microscopic specimens.

4. As soon as possible after the examination, the Syndicate shall publish a list of candidates who have passed arranged in alphabetical order. Candidates who obtain at least 75 per cent. of marks in any subject shall be deemed to have passed with honours in that subject.

On the recommendation of the examiners a gold medal may be awarded to the candidate who has most distinguished himself.

5. A candidate who fails in one subject only may be re-examined in that subject at the next examination. If he fails again he shall have to appear in both the subjects at a subsequent examination.

6. The course of study for the Second M.B. Examination shall be as follows:—

#### PHARMACOLOGY AND MATERIA MEDICA.

The curriculum shall consist of (1) a theoretical course of lectures and (2) a course of demonstration and practical instruction in Pharmacology, Pharmacological Chemistry and Pharmacy.

#### ELEMENTARY BACTERIOLOGY AND PATHOLOGY.

The curriculum shall consist of (1) a theoretical course of instruction in General Pathology, Elementary Bacteriology and Parasitology and (2) a course of practical instruction in Morbid Histology, Elementary Bacteriology and Parasitology.

7. The full marks for each subject and the minimum marks required for passing shall be as follows:—

	Written.	Oral.	Practical.	Total.	Passing Marks.	Passing Marks. in W. & O.	Passing marks in Practical.
Pharmacology and Materia Medica.	500	200	300	1,000	500	280	150
Elementary Bacteriology and Pathology.	500	200	300	1,000	500	280	150

## CHAPTER XLV (B).

## THIRD M.B. EXAMINATION.

1. Any candidate who fulfils the following conditions may be admitted to this examination:—

(a) That he has passed the Second M.B. Examination.

(b) That he has subsequently to passing the Second M.B. Examination completed a regular course of study, theoretical and practical, in the subjects of the examination for not less than a year at a College of Medicine affiliated to the University up to the standard for the Third M.B. Examination.

2. The Third M.B. Examination shall be held twice in each year ordinarily in April and November and shall commence on such dates as the Syndicate shall determine. Every candidate for admission to the examination shall send to the Registrar his application, with a certificate in the form prescribed by the Syndicate and a fee of Rs. 25 at least twenty-one days before the date fixed for the commencement of the examination. A candidate who fails to pass or present himself for examination shall not be entitled to claim a refund of the fee, but may be admitted to one or more subsequent examinations on payment of the prescribed fee on each occasion on producing a certificate that he has since the date of the last examination and within six months preceding his re-examination attended to the satisfaction of the Principal of his college, a further course of study in each of the subjects in which he has to appear at that examination provided that after four failures within two years, he shall not be admitted to the examination except on the special recommendation of the Principal.

3. Every candidate shall be examined in the following subjects:—(1) Forensic Medicine, (2) Hygiene and Public Health.

The examination shall be written, oral and practical.

Three hours shall be allowed for each paper in each subject.

The examination in Forensic Medicine shall consist of (a) one theoretical paper, (b) an oral examination, (c) a practical examination, to include examination on the dead body on points of Medico-legal importance as arising out of or as illustrated by the conditions observable on the dead body, the actual methods of post-mortem examination for Medico-legal purposes, the putting up of materials for Medico-legal chemical analysis and the writing of Medico-legal post-mortem reports.

The examination in Hygiene shall consist of (a) one theoretical paper and (b) an oral examination,

4. As soon as possible after the examination, the Syndicate shall publish a list of candidates arranged in alphabetical order. Candidates who obtain at least 75 per cent. of marks, in any subject, shall be deemed to have passed with honours in that subject.

On the recommendation of examiners a gold medal may be awarded to the candidate who has most distinguished himself.

5. A candidate who fails in one subject only may be re-examined in that subject at the next examination. If he fails again he shall have to appear in both the subjects at a subsequent examination.

6. The course of study for the Third M.B. Examination shall be as follows:—

### FORENSIC MEDICINE.

(1) A course of lectures on Medical Jurisprudence.

(2) Attendance at not less than twelve medico-legal post-mortem examinations.

Medical evidence, with special reference to Indian Evidence Act. Medico-legal reports. Dying declarations.

Signs of death. Post-mortem stains. Rigor mortis. Cadaveric spasm. Putrefaction in air and water.

Mummification. Adipocere Examination of the dead body. Post-mortem Examination in Medico-legal cases.

Age in its Medico-legal relations. Development of the foetus. Changes after birth. The teeth. Ossification and Union of Epiphyses.

Identity of the living. Identity of the dead. Sexual characteristics of the skeleton.

Modes of dying. Causes of sudden death.

Death from asphyxia. Hanging. Strangulation. Suffocation. Throttling. Drowning. Resuscitation from Drowning.

Mechanical injuries and wounds. Chemical, microscopical and spectroscopical examination of blood stains and other stains.

Death by burns and scalds. Death from lightning, electric current, heat-stroke and cold. Starvation—its causation, symptoms and post-mortem appearances. Medico-legal questions relating to pregnancy, delivery and abortion, infanticide, criminal offences, legitimacy.

Medico-legal aspects of insanity. Forms of insanity. Delusions, Illusions, Hallucinations. Criminal responsibility. Modes of placing lunatics under restraint. Medical certificates. Lunacy certificates. Examination of lunatics. Testamentary capacity. Feigned insanity. Placing habitual drunkards under restraint.



**Toxicology.** Diagnosis and general treatment of poisoning. Evidence of poisoning in the dead. Local effects produced by poisons, disease and post-mortem changes. Preservation of viscera for analysis. The detection of poisons, chemical and physiological tests.

Toxicology of the following poisons : Mineral Acids, Corrosive alkalis, carbolic acid, corrosive sublimate, oxalic acid, salts of copper, lead and antimony, Arsenic, Phosphorous, Opium. Cyanogen compounds, alcohol, chloroform, chloral hydrate, kerosene oil, carbon dioxide, carbon monoxide, sulphuretted hydrogen, strychnine, aconite, datura, belladonna, cannabis sativa, nerium odorum, cocaine, calotropic gigantea, plumbago zeylanica, snake venom. Poisonous animal food.

Instruction on the duties which devolve upon practitioners in their relation to the State and on the generally recognised rules of Medical Ethics. Attention should be called to all Notices on these subjects issued by the General Medical Council.

### HYGIENE AND PUBLIC HEALTH.

(1) A course of lectures in Hygiene including demonstrations.

(2) Six practical demonstrations.

(3) Practical instruction in Vaccination by any authorised Vaccinator. Definition. General Hygiene. Special Hygiene. Public Health.

Impurities in Air. Effects of vitiated air generally. Ventilation—natural and artificial. Cubic space.

Impurities in water. Their source and effects. Diseases caused by impure water. Water-supply. Methods of purification and filtration.

Physical examination of waters as regards their potability.

Food. Functions of the four classes of elementary principles of dieting. Average diets. Dietaries.

Different varieties of food. Meat. Inspection of animals and of meat. Effects of unsound meat. Poultry and game. Fish, Cooking. Milk Vegetable Foods, Wheat, Flour, Bread, Barley, Oat, Maize, Rice, Millet, etc. Leguminosae, etc. (Dal). Roots and Tubers (potatoes, carrot, etc.). Herbaceous Vegetable (cabbage, cauliflower, etc.). Fruits. Prepared starches. Sugar. Concentrated foods. Beverages and condiments.

The Removal and Disposal of Sewage. Clothing.

The construction of the dwelling house. Sanitary inspection of a house.

Personal Hygiene in India. The causation and prevention of Endemic and Epidemic diseases.

The general principles of disinfection and the methods of carrying them into effect.

Disposal of the dead.

The powers and legal obligation of the medical practitioner under the Municipal Act ; the correct registration of the cause of death.

**N. B.**—During the period of study, the attention of the student should be directed to the importance of the preventive aspects of Medicine.

5. The full marks for each subject and the minimum marks required for passing shall be as follows :—

	W.	O. & P	Total.	Pass.	W. Pass.	O. & P. Pass.
Forensic Medicine ...	500	500	1,000	500	200	250
Hygiene and Public Health.	500	500	1,000	500	200	250

## CHAPTER XLVI.

### FINAL M. B. EXAMINATION.

1. Any candidate who fulfils the following conditions may be admitted to this examination :—

(a) That he has passed the Third M.B. Examination at least one year previously.

(b) That subsequently to passing the Second M.B. Examination, completed a regular course of study, theoretical and practical, in the subjects of the examination in a College of Medicine affiliated to the University up to the standard of the Final M.B. Examination.

2. The Final M.B. Examination shall take place twice in each year, ordinarily in April and November, and shall commence on such dates as the Syndicate shall determine. Every candidate for admission to the examination shall send to the Registrar his application, with a certificate in the form prescribed by the Syndicate and a fee of Rs. 25 at least twenty-one days before the date fixed for the commencement of the examination. A candidate who fails to pass or present himself for examination shall not be entitled to claim a refund of the fee, but may be admitted to one or more subsequent examinations on payment of the prescribed fee on each occasion on producing a cer-

tificate that he has since the date of the last examination and within the six months preceding his re-examination attended to the satisfaction of the Principal of his College, a further course of study in each of the subjects in which he has to appear at that examination.

3. Every candidate shall be examined in the following subjects : (1) Medicine, including Applied Anatomy and Physiology, Clinical Pathology and Therapeutics. (2) Surgery, including Applied Anatomy and Physiology and Clinical Pathology, Ophthalmology. Diseases of Ear, Throat, Nose, Radiology. Orthopaedics and Venereal Diseases. (3) Midwifery and Diseases of Women.

The examination shall be written, oral and practical. Three hours shall be allowed for each paper in each subject.

The examination in Medicine shall consist of—

(a) Two theoretical papers. An average of at least half an hour should be allowed to answer each question.

(b) An oral examination including an examination on pathological specimens, secretions, the testing of urine, clinical microscopy and Prescription writing.

(c) A clinical examination, at least one hour being allowed to the candidate for the examination of, and report on, his principal case. The examination of secretions, the testing of urine, clinical microscopy and Prescription writing, should form a part of this examination.

The examination in Surgery shall consist of—

(a) Two theoretical papers. An average of at least half an hour should be allowed to answer each question.

(b) A clinical examination, at least half an hour being allowed to the candidate for the examination of, and report, on his principal case.

(c) An oral examination in which questions on the use of surgical instruments and appliances on the application of splints and bandages and on museum specimens illustrating surgical pathology, interpretation of X-Ray records and Pathological slides shall form a special part.

(d) Operations on the dead body.

The examination in Midwifery and Diseases of women shall consist of—

(a) Two theoretical papers. An average of at least half an hour should be allowed to answer each question.

(b) An oral examination including questions on specimens, models, and instruments and appliances.

(c) A practical examination on obstetric and gynaecological operations on the manikin and a clinical examinations, whenever possible.

**N.B.**—In midwifery, where a clinical examination is not held, the duly attested records of the work done by the candidate

**in Clinical Midwifery, must be presented to the Examiners for assessment and no candidate should be allowed to pass who fails to obtain 50 per cent. of the aggregate marks assigned to Clinical and Practical Midwifery and Gynæcology.**

4. As soon as possible after the examination, the Syndicate shall publish a list of candidates who have passed, arranged in alphabetical order. Candidates who obtain at least 75 per cent. of marks in the aggregate shall be deemed to have passed with honours. Every candidate on passing shall receive a diploma in the form given in Appendix A.

On the recommendation of the examiners a gold medal may be awarded to the candidate who has most distinguished himself.

5. A candidate who fails to pass the examination may be re-examined in the subject or subjects in which he failed provided he completed the three portions of the final examination within a period of nineteen months. If he fails to present himself for re-examination or fails to pass within the period of nineteen months he shall be re-examined in all three subjects.

6. The course of study shall be as follows :—

**(A) Medicine (including Applied Anatomy and Physiology, Clinical Pathology and Therapeutics).**

(i) A course of systematic instruction in the principles and practice of Medicine.

(ii) Instruction in Clinical methods and in the recognition and interpretation of physical signs.

(iii) A medical clinical clerkship for a period of six months of which at least three months must have been spent in the Hospital wards.

(iv) Lectures or Demonstrations in Clinical Medicine and attendance on general In-patient and Out-patient Medical practices during two academical years which may be concurrent with Surgical practices prescribed under (B) (iv) and obstetric and gynæcological practice as prescribed in (C) (iv)

(v) Instruction in Applied Anatomy and Physiology and in Clinical Pathology.

(vi) Practical instruction in Clinical and Special Pathology together with a course of museum and laboratory demonstrations and practical instruction in the conduct of autopsies including attendance as a post-mortem clerk in at least ten cases.

(vii) Instruction in Therapeutics and Prescribing including Pharmacological and Physical Therapeutics and the Methods of Treatment by vaccines and sera.

(viii) Instruction in the following subjects, viz. :—

(a) Children's diseases.

(b) Tropical diseases including acute Infectious Diseases " Fevers."

- (c) Tuberculosis.
- (d) Mental diseases.
- (e) Diseases of the Skin.
- (f) Theory and Practice of Vaccination.

**(B) Surgery (including Applied Anatomy and Physiology and Clinical Pathology, Ophthalmology, Diseases of ear, nose, throat, Radiology, Orthopædics and Venereal Diseases).**

(i) A course of systematic instruction in the principles and practice of Surgery.

(ii) Practical instruction in Surgical Methods including Mechano-Therapeutics (Orthopædics).

(iii) A Surgical Dressership for a period of six months of which at least three months must have been spent in the Hospital wards.

(iv) Lectures or Demonstrations in Clinical Surgery and attendance on general In-patient and Out-patient Surgical practice (including ophthalmic practice in an Ophthalmic hospital or O.P. Department for a period of three months and attendance in the ear, nose and throat department of a recognised hospital) during two academical years which may be concurrent with medical practices prescribed under (A) (iii) and Obstetric and Gynæcological practice as prescribed under (C) (iv).

(v) Instruction in the Administration of Anæsthetics, the candidate being certified to have administered Anæsthetics on at least ten occasions.

(vi) A course of instruction in Operative Surgery.

(vii) Instruction in Applied Anatomy and Physiology.

(viii) Practical instruction in Clinical and special Pathology together with a course of museum and laboratory demonstrations and practical instruction in the conduct of autopsies including attendance as a post-mortem clerk in at least ten cases.

(ix) Instructions in the following subjects, viz.:—

- (a) Diseases of the Eye; Refraction; use of Ophthalmoscope.
- (b) Diseases of the Ear, Throat and Nose: use of Otolaryngoscope and Rhinoscope.
- (c) Radiology.

**(C) Midwifery and Diseases of Women.**

Instruction during a period of at least two terms comprising—

(i) Courses of systematic instruction in the principles and practice of obstetrics and gynæcology.

(ii) Lectures or Demonstrations in Clinical Obstetrics and Gynæcology and attendance on In-patient and Out-patient gynæcological practice.

(iii) Instruction in the following subjects, viz.—

(a) Ante-natal conditions.

(b) Infant Hygiene.

(iv) Every student should, after attending the course of systematic instruction in the principles and practice of Surgery and of Obstetrics, give continuous attendance on Obstetrical Hospital Practice under the supervision of a competent officer for a period of three months, during one month of which at least he should perform the duties of an intern student in a lying-in-hospital or ward. He should attend during the period twenty cases of labour under adequate supervision. Extern or district maternity work should not be taken until the student has personally delivered at least five cases in the lying-in-hospital or ward to the satisfaction of his teacher.

A certificate of having attended twenty cases of labour should state that the student has personally attended each case during the course of labour, making the necessary abdominal and other examinations, under the supervision of the certifying officer, who should describe his official position and state how many of the twenty cases were conducted in hospital.

**N. B.**—During the period of study, the attention of the student should be directed to the importance of the preventive aspects of Medicine.

7. The full marks for each subject and minimum marks required for passing shall be as follows :—

	W.	Oral.	Practical.	Total.	Passing marks.	Passing marks W. & O.	Passing marks in Practical.
Medicine	500	200	300	1,000	500	280	150
Surgery	500	200	300	1,000	500	280	150
Midwifery	500	200	300	1,000	500	250	150

## CHAPTER XLVII.

### DOCTOR OF MEDICINE.

1. An examination for the degree of Doctor of Medicine shall be held annually in Calcutta and shall commence at such time as the Syndicate shall determine, the approximate date to be notified in the Calendar.

2. Any Bachelor of Medicine may be admitted to this Examination on the production of certificates—

Of having subsequently to passing the M.B. Examination completed, either three years' continuous practice of the Medical Profession or two years of Hospital practice.

Each of these periods shall be reduced by one year if the candidate be a Graduate with Honours in Medicine.

No application shall, however, be entertained unless two Members of the Faculty of Medicine or two Doctors of Medicine shall have testified, to the satisfaction of the Syndicate, that since graduating as Bachelor of Medicine, the candidate has practised his profession with repute for the period specified, and that in habits and character, he is a fit and proper person for the Degree of Doctor.

3. Every candidate for admission to the examination shall send his application to the Registrar, with a certificate in the form prescribed by the Syndicate and a fee of Rs. 200, at least two months before the date fixed for the commencement of the examination.

4. A candidate who fails to pass or present himself for examination shall not be entitled to claim a refund of the fee. A candidate may be admitted to one or more subsequent examinations on payment of a like fee of two hundred rupees on each occasion.

5. Every candidate shall be examined in the following subjects:—

Medicine (two papers, of which one may be a case for commentary).

Pathology (one paper).

Mental Diseases (one paper).

The examination shall be written, oral and practical, and shall also include a thesis.

6. A candidate for the Degree of Doctor of Medicine shall transmit to the Registrar not less than two months before the commencement of the examination a thesis or published work embodying the result of independent research and having definite relation to the subjects of Medicine, Pathology or Mental Diseases. The candidate must indicate in what respects his thesis or research appears to him to advance medical knowledge or practice. The candidate may also submit any printed contribution or contributions to the advancement of Medical Science published independently or conjointly.

If the thesis or published work is approved by the Examiners, they will report on the same as "commended" or "highly commended." Unless the thesis is commended, the candidate shall not be admitted to the examination.

7. As soon as possible after the examination, the Syndicate shall publish a list of successful candidates arranged in alpha-

betical order with the titles of their thesies and the opinions of the Examiners thereon placed against the name of each candidate. If in the opinion of the Examiners, sufficient merit be evinced, a University gold medal shall be awarded to the candidate passing with the greatest distinction.

8. Any candidate who is not a Bachelor of Medicine may be admitted to the examination for the Degree of Doctor of Medicine in accordance with the conditions laid down in Regulations 5 and 6 and on producing certificates—

- (a) of having passed the Licentiate Examination in Medicine and Surgery of the University;
- (b) of having passed the examination in Zoology required for the Preliminary Scientific M.B. Examination;
- (c) of having practised the medical profession with repute for the period specified;
- (d) of being in habits and character a fit and proper person for the Degree of Doctor.

## CHAPTER XLVIII.

### MASTER OF SURGERY.

1. An examination for the Degree of Master of Surgery shall be held annually in Calcutta and shall commence at such time as the Syndicate shall determine, the approximate date to be notified in the Calendar.

2. Any Bachelor of Medicine may be admitted to this examination on production of certificates of having subsequently to passing the M.B. Examination, completed—

Either three years' continuous practice of the medical profession;

Or two years of hospital practice.

Each of these periods shall be reduced by one year if the candidate be a graduate in Medicine with Honours in Surgery.

No application shall, however, be entertained unless two members of the Faculty of Medicine or two Masters of Surgery shall have testified, to the satisfaction of the Syndicate, that since graduating as Bachelor of Medicine, the candidate has practised his profession with repute for the period specified, and that in habits and character, he is a fit and proper person for the Degree of Master.

3. Every candidate for admission to the examination shall send his application to the Registrar with a certificate in the form prescribed by the Syndicate and a fee of Rs. 200 at least two months before the date fixed for the commencement of the examination.



4. A candidate who fails to pass or present himself for examination shall not be entitled to claim a refund of the fee. A candidate may be admitted to one or more subsequent examinations on payment of a like fee of two hundred rupees on each occasion.

5. Every candidate shall be examined in the following subjects:—

- (1) Surgery (two papers, one of which may be a case for commentary).
- (2) Surgical Pathology and Surgical Anatomy (one paper).
- (3) Ophthalmology or any other branch of special Surgery that may be recognised by the University from time to time (one paper).
- (4) Operative Surgery and the use of instruments.

The examination shall be written, oral and practical.

6. A candidate for the Degree of Master of Surgery shall transmit to the Registrar not less than two months before the commencement of the examination, a thesis or published work embodying the result of independent research and having definite relation to Surgery. The candidate must indicate in what respects his thesis or research appears to him to advance surgical knowledge or practice. The candidate may also submit any printed contribution or contributions tending to the advancement of Medical Science published independently or conjointly.

If the thesis or published work be approved by the Examiners, they will report on the same as “commended” or “highly commended.” Unless the thesis is commended, the candidate shall not be admitted to the examination.

7. As soon as possible after the examination, the Syndicate shall publish a list of successful candidates arranged in alphabetical order, with the titles of their theses and the opinions of the examiners thereon placed against the name of each candidate. If, in the opinion of the Examiners, sufficient merit be evinced, a University gold medal shall be awarded to the candidate passing with the greatest distinction.

8. Any candidate who is not a Bachelor of Medicine may be admitted to the examination for the Degree of Master of Surgery, in accordance with the conditions laid down in Regulations 5 and 6 on producing certificates to the following effect—

- (a) of having passed the Licentiate Examination in Medicine and Surgery of the University;
- (b) of having passed the examination in Zoology required for the Preliminary Scientific M.B. Examination;
- (c) of having practised the Medical profession with repute for the period specified;

(d) of being in habits and character a fit and proper person for the degree of Master of Surgery.

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## CHAPTER XLIX.

### MASTER OF OBSTETRICS.

1. An examination for the Degree of Master of Obstetrics shall be held annually in Calcutta and shall commence at such time as the Syndicate shall determine, the approximate date to be notified in the Calendar.

2. Any Bachelor of Medicine may be admitted to this examination provided he shall produce certificates to the following effect—

- (a) of having, subsequent to passing the M. B. Examination, attended during a period of six months a course of clinical instruction in a recognised hospital or ward specially devoted to the treatment of Obstetric and Gynæcological cases;
- (b) of having, subsequent to passing the M.B. Examination, had personal charge of at least twenty cases of labour, a record of which must be submitted;
- (c) of having subsequently to passing the M.B. Examination, completed—

Either three years' continuous practice of the medical profession,

Or two years of hospital practice.

If the candidate be a graduate in Medicine with Honours in Midwifery, each of these periods shall be reduced by one year.

No application shall, however, be entertained unless two Members of the Faculty of Medicine or two Masters of Obstetrics shall have testified, to the satisfaction of the Syndicate, that since graduating as Bachelor of Medicine the candidate has practised his profession with repute for the period specified and that in habits and character he is a fit and proper person for the Degree of Master.

3. Every candidate for admission to the examination shall send his application to the Registrar with a certificate in the form prescribed by the Syndicate and a fee of Rs. 200 at least two months before the date fixed for the commencement of the examination.

4. A candidate who fails to pass or present himself for examination shall not be entitled to claim a refund of the fee.

A candidate may be admitted to one or more subsequent examinations on payment of a like fee of two hundred rupees on each occasion.

5. Every candidate shall be examined in the following subjects:—

- (1) Obstetrics (two papers, one of which may be a case for commentary).
- (2) Anatomy, Physiology, Embryology and Pathology in relation to Obstetrics and Gynæcology (one paper).
- (3) Gynæcology (one paper).
- (4) Operative Gynæcology and the use of instruments.

The examination shall be written, oral and practical.

6. A candidate for the Degree of Master of Obstetrics shall transmit to the Registrar, not less than two months before the commencement of the examination, a thesis or published work embodying the result of independent research and having definite relation to Obstetrics or Gynæcology. The candidate must indicate in what respects his thesis or research appears to him to advance Obstetric or Gynæcological knowledge or practice. The candidate may also submit any printed contribution or contributions tending to the advancement of Medical Science published independently or conjointly.

If the thesis or published work be approved by the Examiners they will report on the same as “commended,” or “highly commended.”

Unless the thesis is commended, the candidate shall not be admitted to the examination.

7. As soon as possible after the examination, the Syndicate shall publish a list of successful candidates arranged in alphabetical order, with the titles of their theses and the opinions of the examiners thereon placed against the name of each candidate. If, in the opinion of the examiners, sufficient merit be evinced, a University gold medal shall be awarded to the candidate who shall pass with the greatest distinction.

8. Any candidate who is not a Bachelor of Medicine may be admitted to the Examination for the Degree of Master of Obstetrics in accordance with the conditions laid down in Regulations 5 and 6, on producing certificates to the following effect:—

- (a) of having passed the Licentiate Examination in Medicine and Surgery of the University;
- (b) of having passed the Examination in Zoology required for the Preliminary Scientific M.B. Examination;
- (c) of having practised the medical profession with repute for the period specified;
- (d) of having, subsequent to passing the Licentiate Examination in Medicine and Surgery, attended during

a period of six months a course of clinical instruction in a recognised hospital or ward specially devoted to the treatment of Obstetric and Gynæcological cases;

- (e) of having, subsequent to passing the Licentiate Examination in Medicine and Surgery, had personal charge of at least twenty cases of labour, a record of which must be submitted;
- (f) of being in habits and character a fit and proper person for the Degree of Master of Obstetrics.

## CHAPTER I.

### DIPLOMA IN PUBLIC HEALTH.

1. An examination for a Diploma in Public Health shall be held twice every year in Calcutta and shall commence at such time as the Syndicate shall determine, the approximate date to be notified in the Calendar. The examination shall be divided into two parts—Part I and Part II, as defined below in section 5.

2. Any Bachelor of Medicine or Licentiate in Medicine and Surgery may be admitted to this examination on production of certificates of having, subsequent to passing the M.B. or L.M.S. Examination

(i) attended, during a period of not less than six months, approved courses of instruction in (a) Bacteriology and Parasitology including Medical Entomology and Protozoology, Helminthology and Immunology especially in their relation to diseases of man and to those diseases of the lower animals transmissible to man—this course to last at least 180 hours; (b) Chemistry and Physics in their relation to public health—this course to last at least 120 hours; and (c) Meteorology and Climatology in relation to public health—this course to last at least 10 hours;

(ii) been diligently engaged for at least six months in acquiring a practical knowledge of the duties, routine and special, of public health administration under the supervision of a recognised medical officer of health of a town or sanitary area of not less than fifty thousand inhabitants, who shall certify that the candidate has received from this officer or from other competent Medical officer, during not less than three hours on each of 60 working days, instruction in these duties [a candidate who produces evidence that he has been in independent sanitary charge of a town or district (or in the case of Calcutta, a part of a district) for a period of at least six months may under very special circumstances be exempted from this rule];

(iii) attended for three months in the clinical practice of a recognised hospital for infectious diseases and has received therein instruction in the methods of administration (at least 30 attendances of not less than two hours each shall be required);

(iv) received, during not less than 80 hours, at an institution or from teachers approved by the University, instructions in the following subjects:—

The Principles of Public Health and Sanitation ...	30 hours.
Epidemiology and Vital Statistics ...	20 „
Sanitary Law and Administration ...	20 „
Sanitary Construction and Planning ...	10 „

(the numbers indicate the approximate proportion of hours to be devoted to each subject);

(v) completed two years' continuous practice of the medical profession, which may include the period of training specified above. Provided that a candidate may appear in Part I (but not Part II) of the examination on the completion of a year of practice. Provided also that a candidate may not appear in Part II until he has passed in Part I of the Examination.

3. Every candidate for admission to each part of the examination shall send his application to the Registrar with a certificate in the form prescribed by the Syndicate and a fee of Rs. 100 at least one month before the date fixed for the commencement of the examination.

4. A candidate who fails to pass or present himself for examination shall not be entitled to claim a refund of the fee. A candidate may be admitted to one or more subsequent examinations on payment of a fee of 50 rupees on each occasion.

5. Every candidate shall be examined in the following subjects:—

#### PART I.

- (a) Bacteriology and Parasitology including Medical Entomology, Protozoology, Helminthology and Immunology (one paper).
- (b) Chemistry and Physics and Meteorology and Climatology and Geology in relation to Public Health (one paper).

#### PART II.

- (c) Hygiene and Sanitation including sanitary engineering (one paper).
- (d) Epidemiology and Infectious Diseases (one paper).
- (e) Sanitary Law, Vital Statistics and Public Health Administration (one paper).

The examination shall be written, oral and practical and shall include Food Inspection and Sanitary Inspection of factories, schools, premises or areas.

6. The limits of subjects referred to in paragraph 5 shall be as follows:—

(a) Chemistry and Physics.

The use of the chemical balance, alkalimetry and acidimetry. Preparation and use of standard solutions. The theory and determination of hydrogen ion concentration. The chemical analysis of water—qualitative and quantitative. The interpretation of the sanitary analysis of water. A knowledge of Indian waters. The chemical examination of alum, lime, bleaching powder and other substances used in water purification. The detection and estimation of poisonous metals in water. The chemical examination of sewage, sewage effluents and other effluents. The chemical examination of air and its impurities. The chemical examination of milk, edible fats and oils; cereal foods, carbohydrate foods, tea, coffee, chicory, cocoa, mustard, pepper, spices, etc.; the detection and estimation of preservatives and adulterants in these. The microscopical examination of foodstuffs. The examination for parasites—animal and vegetable in foodstuffs. The examination of vinegar, lime juice, beer, spirits and other liquid foods and drinks. The examination of foods for poisonous materials and poisonous metals. The consideration of preservatives and colouring matters; the detection of these. The examination and analysis of disinfectants—liquid, gaseous and solid.

Microscopic examination of deposits in waters and effluents; the common algae, etc., in Indian waters; the examination of foodstuffs and their adulterants and common parasites; the common fibres of clothing.

The determination of specific gravities of solids and liquids. Properties of gases and liquids; the laws governing the behaviour of these; the general laws of mechanics, heat, hydrostatics, hydraulics, etc., as they apply to public health, questions of ventilation, heating, water-supply, drainage, etc. Humidity and its determination. Electro-conductivity and its measurement. Properties of light. The construction and use of the microscope, polariscope, spectroscope.

.(b) Geology.

The general elementary geology of India. The composition and properties of soils, rocks, clays, etc., with specific reference to water-supplies, building sites, etc. The weathering of rocks especially in relation to the composition of Indian soils.

Springs, sub-soil water, artesian and subartesian conditions. Deltaic formation with special reference to Indian deltas.

(c) Climatology and Meteorology.

The principles of meteorology; its relationships to health and disease; the construction and use of meteorological instruments and the recording and correction of meteorological data. The monsoons and chief constant winds of India. The reading of weather charts.

General principles and determining factors, with special reference to India. The relationship of climate to health and disease.

(d) Bacteriology, Parasitology, Protozoology, Entomology, Helminthology and Immunology.

General characters of micro-organisms; classification, morphology, biology of bacteria, conditions of growth and multiplication, aerobiosis and anaerobiosis.

General consideration as to infectious diseases, the mode of spread under natural conditions, by carriers, and other agencies; the discovery and isolation of organisms in disease; the general pathology of infectious diseases. The study of immunity and the theories of its mechanism; its application in disease prevention.

The study of the following diseases in particular and the causative organisms:—Inflammatory conditions, pyococcal infections, pyæmia, septicæmia, gonorrhœa, cerebrospinal meningitis, pneumonia, influenza, Malta fever, typhoid and coli group of infection, food poisoning, dysentery, plague, cholera, glanders, tetanus, anaerobic wound infections, anthrax, leprosy, actinomycosis, Madura foot and other streptothrix affections.

The bacteriological examination of water, sewage, soils, air and milk and air and foodstuffs.

Collection of water samples for analysis, the special methods adopted for examination of these and the interpretations of the results; standards of purity; the special organisms found in water and the methods of isolation. The examination of water-supplies for pathogenic bacteria. The examination of sewage and other effluents.

Methods of examination of air and soils and the special organisms found therein. Examination of foodstuffs, with special reference to food poisoning.

## Animal Parasites.

A general knowledge of the structure and life histories of—

## Cestodes:—

*Taenia Solium*—*Cysticercus cellulosae*.

*Taenia Saginata*—*Cysticercus bovis*.

*Dibothriocephalus latus*.

*Hymenolepis nana*.

*Hymenolepis diminuta*.

## Trematodes:—

*Schistosomum hæmatobium*.

*Schistosomum mansoni*.

*Schistosomum japonicum*.

*Clonorchis sinensis*.

*Paragonimus westermani*.

*Fasciolopsis buski*.

*Gastrodiscus hominis*.

## Nematodes:—

*Strongyloides*.

*Necator americanus*.

*Ancylostoma duodenale*.

*Ascaris lumbricoides*.

*Oxyuris vermicularis*.

*Trichinella spiralis*.

*Trichuris trichuria*.

*Filaria medinensis*.

*Filaria loa*.

*Filaria bancrofti*, etc.

*Gnathostomum siamense*.

## Protozoology.

Origin, general morphology, biology, recognition, etc., and life histories of the following:—

The Entamoebæ of man: *E. coli*, *hystolytica*, *gingivalis*; *E. nana*; Cutchlü.

Intestinal Flagellates:

*Cercomonas*, *Bodo*, *Trichomonas*, *Giardia*, *Herpetomonas*; *Leishmania donovani*, *L. tropica*.

Trypanosomes: *T. lewisi*, *evansi*, *brucei*, *gambiense*, etc.; *cruzi*. Coccidiosis.

Piroplasmosis.

The Malaria parasites of man; *proteosoma*, *haeteridium*, *haemogregarines*.

*Sarcosporidium*.

*Rhinosporidium Deeveri*.



**Balantidium coli.**

The organisms causative in relapsing fever, rat bite disease, Vincent's angina, syphilis, yaws, epidemic jaundice, yellow fever, rabies.

**Entomology.**

Entomological methods, collecting, preserving and packing, the life histories, bionomics, recognition of flies and bloodsucking arthropodes, mosquitoes (culicines and anophelines), house flies, tsetse flies; tabanus sand flies, ticks, bugs and lice with special consideration of the common malaria-carrying mosquitoes of India.

**(e) Principles of Public Health and Sanitation.**

The principles and practice of personal, communal, international and occupational hygiene. The effect of climate, environment and food on the human organism and communities; water and water-supplies; water purification and disinfection, water-borne disease. The study of the atmosphere in its relation to health and disease; ventilation of towns, houses and buildings; the causes and effects of vitiation of the atmosphere; the planning of towns, villages, houses and huts, factories and barracks.

The effect of soils on health; building sites. The collection and disposal of refuse and excretal matter. Foodstuffs, their composition, purity, examination, sophistication, etc.

The study of diets specially in regard to tropical countries with special reference to such diseases as beriberi, epidemic dropsy, rickets, scurvy, etc.

The effects of famine conditions and economic stress on the human organism. Clothing in relation especially to climate.

Epidemic, endemic and infectious diseases of both temperate and tropical climates. Their epidemiology, geographical and seasonable distribution, origin, causation, mode of spread, etc., and prevention, special attention being paid to the study of such diseases as occur in India.

The control and prevention of infectious diseases by isolation, disinfection, vaccination, etc., with special reference to small-pox, cholera, plague and other tropical diseases. The construction and administration of hospitals for infectious diseases. Industrial hygiene, the special diseases of occupations, causation, their detection and prevention. Maternity and child welfare work.

School hygiene and medical examination of school children. Anti-tuberculosis schemes and their applicability. Venereal diseases; their cause: their control and treatment by the State. The control of food-supplies, markets, dairies, milkshops, slaughter houses.

Meat inspection, food inspection, methods of examination of sound and unsound food.

Building construction; the making of plans, their interpretation and criticism.

(f) Sanitary Law.

The history of sanitary law and administration in England, India and other countries. The present system of sanitary administration in India. Forms of Local Government and their relation to public health and sanitation. The sanitary laws and enactments of Great Britain and India. The duties of health officers, sanitary inspectors, factory inspectors, certifying surgeons—Port-Health Laws and duties of Port-Health officers.

(g) Vital Statistics.

The collection, modes of calculation and the interpretation of vital statistics. The census; calculation of population, birth rates, death rates, marriage rates, infantile mortality rates, etc. Elementary statistical methods and their application and interpretation. Life tables. The preparation of sanitary reports. The study of the Annual Reports of Public Health Commissioner and Directors of Public Health in India; methods of epidemiological investigation.

7. The full marks for each subject and the minimum marks required for passing shall be as follows:—

	Written.		Oral and Practical.		Total passing marks.
	Total marks.	Passing marks.	Total marks.	Passing marks.	
Part I.					
Bacteriology and Parasitology . .	50	25	50	25	50
Chemistry and Physics, etc. ...	50	25	50	25	50
Part II.					
Hygiene and Sanitation ...	50	25	50	25	50
Epidemiology and Infectious Diseases ... ..	50	25	50	25	50
Sanitary Law, Vital Statistics, etc. ... ..	50	25	50	25	50

These regulations shall be in operation with effect from the year 1927.

## CHAPTER LI.

## INTERMEDIATE EXAMINATION IN ENGINEERING.

1. The Intermediate Examination in Engineering will be held annually at such time and place as the Syndicate shall determine, the approximate date to be notified in the Calendar.

2. Any under-graduate of the University may be admitted to this examination, provided he has prosecuted a regular course of study in a College of Engineering affiliated to the University for two academical years after passing the Intermediate Examination in Arts or in Science, or for one academical year after passing the B.Sc. Examination in Mathematics, Physics and Chemistry in which case he shall be excused from appearing in Section A of the Intermediate Examination in Engineering.

3. The Intermediate Examination shall be divided into two Sections, A and B, the limits of which are set down in the Syllabus.

Section A may be taken at the end of the first year of the Intermediate course, and in the event of a candidate failing in one group, Mathematics or Physics or Chemistry, he may be allowed to present himself for re-examination in that group when appearing at the Intermediate Examination in Engineering. Such a candidate may obtain credit for the remaining group of Section A, but he shall not be allowed to pass in Section B unless he has previously qualified in all groups of Section A.

4. Every candidate for admission to the examination shall send to the Registrar his application with a certificate in the form prescribed by the Syndicate and a fee of Rs. 15 for Section A or Rs. 30 for the Intermediate Examination in Engineering (whether he has previously passed in Section A or not), fourteen days before the date fixed for the commencement of the examination.

A candidate who fails to pass or to present himself for the examination shall not be entitled to claim a refund of the fee.

A candidate may be admitted to one or more subsequent examinations on payment of a like fee of the amount herein prescribed on each occasion.

5. Every candidate shall be examined in the following subjects :—

Section A—Mathematics and Science.

Section B—Mathematics and Applied Science ; Descriptive Engineering; Surveying; Drawing; Estimating.

6. The limits of the subjects shall be as follows :—

## MATHEMATICS.

### SECTION A.

#### *Computation and Mensuration.*

(a) Approximate and abbreviated methods of performing numerical calculations.

The Theory of Logarithms. Use of Logarithmic tables. Application of Logarithms to Arithmetical and Trigonometrical calculations, including the solution of triangles and the determination of heights and distances. Proof of the formulæ used.

(b) Mensuration of plane and solid figures, including the areas of plane polygons in Cartesian and polar co-ordinates, and the application of Simpson's rules, the prismoidal formulæ and Guldin's theorems. Proof of the formulæ used.

#### *Plane Analytical Geometry.*

Rectangular Cartesian co-ordinates and polar co-ordinates. Graphs of simple functions. Analytical Geometry of the straight line and circle. Standard equations of the parabola, ellipse and hyperbola.

#### *The Elements of the Differential Calculus with simple applications.*

Graphs : gradient : function : limits : nature of differentiation. Derivative of a power, general theorems : Geometrical applications, tangent, normal, etc., the second differential co-efficient : curvature : theory of maxima and minima : meaning of integration : integration of powers : integration by change of variable. Area under a curve : volumes of solids : differentiation of logarithms : integration by logarithms : the exponential functions : simple examples from Chemistry, electricity and magnetism ; differentiation and integration of trigonometric functions : oscillatory motion : simple examples on various methods of integration : area of surface of revolution : approximate calculation of integrals : meaning of definite integral : applications to mensuration, centre of gravity : moments of inertia.

#### *Statics.*

Composition of concurrent and parallel forces acting on a rigid body, centre of parallel forces ; centres of mass ; reduc-

tion of any system of co-planer forces acting on a rigid body to a single resultant force and couple and to a single resultant force of couple. Conditions of equilibrium; statically equivalent system of forces; problems on equilibrium. Friction machines.

## SECTION B.

### *Plane Analytical Geometry.*

Elementary Analytical Geometry with special reference to the properties of the parabola, ellipse, hyperbola and other commonly occurring curves whose equations are simple in form.

### *Calculus.*

Leibnitz's theorem: partial differentiation: Elementary proof of Taylor's and Maclaurin's theorems: expansion of functions of a single variable.

Integration: definite integrals: applications.

### *Dynamics.*

(a) Uniform and uniformly accelerated motion. Composition of velocities and accelerations. Relative velocities and accelerations. Projectiles.

The laws of motion with simple illustrations such as the motion of a particle on an inclined plane, motion of two particles connected by a string, uniform circular motion of a particle.

(b) Impulse of a force; principle of linear momentum for a single particle and for a system of particles; simple cases of impact, including the impact of two spheres whose centres move in same plane.

Work of a force; principle of energy for a single particle and for a system of particles: application of the principle to the solution of problems; elementary properties of liquids.

### *Elementary Applied Mechanics.*

(a) *Definition of terms.*—Structure. Stress. Strain. Working load. Factor of safety. Fatigue. Elasticity.

(b) *External Influences tendency to produce Rupture in Simple Beams.*—Moments of flexure and resistance. Cantilevers Beams supported at two ends. Moment of inertia. Shearing stress. Deflection.

(c) Application in simple cases of the principles of strength and deflection to simple timber and iron beams and roofs.

(d) *Foundations and Walls*.—Stability of walls. Failure by overturning, crushing and sliding.

Empirical rules for retaining walls.

## CHEMISTRY.

### SECTION A.—GENERAL CHEMISTRY.

#### *Lecture Course.*

The study of the preparation and properties of the following elements and their typical compounds.

Chlorine; Carbon, its allotropes and their economic uses; the technology of fuels, coal gas, oil gas, producer gas; Silicon; Copper, including the more important alloys of copper; Calcium; Aluminium; Iron; Chromium; Zinc; Manganese; Arsenic; Antimony; Tin; Lead, including Red Lead, White Lead.

Outline of the study of Thermo-Chemistry, its methods; combustion; explosion.

#### *Practical Chemistry.*

The study of the characteristic reactions and the separation of Mercury, Lead, Copper, Arsenic, Antimony, Tin, Iron, Aluminium, Chromium, Zinc, Manganese, Barium, Calcium, Sodium, Potassium, Ammonia, Sulphuric Acid, Chlorine, Fluorine, Phosphoric Acid.

## PHYSICS.

### SECTION A.—GENERAL PHYSICS.

#### (a) *Heat.*

Expansion of solids, liquids and gases. Regnault's experiments on the absolute expansion of mercury and the expansion of gases. Charles' Law. Principles of thermometry. Thermometers for various purposes. Absolute temperature. Density of solids, liquids and gases. Calorimetry; correction for radiation. Specific heats of solids and liquids. Determination of the specific heats of gases at constant pressure and constant volume. Dulong and Petit's Law. Change of state of aggregation. Critical temperature; continuity of state. Measurement of heat of fusion and vaporisation. Influence of pressure on melting and boiling points. Methods of liquefying gases. Pressure of saturated steam. Hygrometry.

*(b) Light.*

Reflection and refraction. Velocity of propagation. Foucault's and Fizeau's experiments. Plane and spherical mirrors. Refraction. Prisms, minimum deviation. Determination of refractive indices of solids and liquids. Lenses. The Sextant, Telescope and Field glasses. Simple experiments on radiant heat and electrical radiation. Dispersion. Spectroscopes and spectra. Colour.

*(c) Statical Electricity.*

Electrification by friction. Electroscopes. Ice-pail experiments. Induction. Electrophorous, Influence machine. Electric work and energy: potential, lines and tubes of force, equipotential surfaces. Quadrant electrometer. Electrostatic units. Condensers; capacity, two concentric spheres, the Leyden jar. Specific inductive capacity. Statical comparison of capacities.

*(d) Current Electricity.*

Chemical and thermal methods of producing currents. Electrolytic conduction. Electrolysis of fused compounds and of saline solutions. Faraday's Laws. Coulometers.

Ohm's Law. Kirchhoff's Laws. Units of resistance. Resistance coils. Wheatstone's bridge. Resistance of battery. Resistance of galvanometer. Electromotive force. Standard cells. Determination of Electromotive force; the potentiometer. Joule's Law.

*(e) Magnetism.*

Fundamental experiments. Magnetic fields. Magnetic curves. Declination theodolite; dip circle. Methods of magnetisation.

Relation of Magnetism to electricity. Oersted's experiment. Galvanometers. Electrodynamical experiments; Electromagnets. Permeability and methods of measuring it, the ballistic galvanometer. Magnetic hysteresis, Magnetic flux, magnetomotive force, reluctance. Law of traction.

Induction of currents; Lenz's Law; Ruhmkorff's coil. Self-induction, Electromagnetic units.

*Practical Exercises.*

Measurement of thickness of plates by wire-gauge, micrometer screw gauge, micrometer callipers, cover glass tester, spherometer.

Determination of radius of curvature of lenses by the spherometer.

The cathetometer ; adjustments ; verification of Boyle's Law ; co-efficients of tensional elasticity.

Dividing machines and their uses.

The balance ; adjustments ; weighing by the method of vibration ; specific gravity of solids.

Moments of inertia.

The barometer ; reading and correction.

Thermometer ; comparison, verification of fixed points.

Co-efficients of expansion.

Hygrometry ; dew-point hygrometers ; psychrometers ; comparison of results.

Calorimetry ; correction for loss of heat ; specific heat of solids ; heat of evaporation.

Melting and boiling points ; distillation.

Pressure of aqueous vapour.

Exercises with the spectroscope. Measurement of indices of refraction. Photometric experiments. Focal distances of mirrors and lenses.

Comparison of lengths. Determination of cross sections and volumes. Specific gravity of solids and liquids. Setting up and reading of galvanometers, Ohm's law, Wheatstone's bridge, the meter bridge, insulations, resistance, the potentiometer, current, and voltage measurements, Kelvin's balance, current, voltage, wattage.

Heating effects of currents.

Electrolytic current measurements.

## SECTION B.—APPLIED PHYSICS.

Conduction : measurement of conductivity for poor, medium and good conductors.

Application of theory of steady flow to practical problems.

The two laws of thermodynamics : the Carnot cycle : dissipation of Mechanical Energy : entropy, the  $\theta$   $\phi$  diagram, thermodynamics of a fluid ; change of state : The Joule Thomson porous plug experiment.

Osmotic pressure : vapour pressure : radiation.

Total normal electric induction over a surface : Gauss' theorem and its applications : energy in the electric field : lines and tubes of force : condensers : specific inductive capacity : theory of magnetic shells. Electromagnetic induction : thermo-electric currents : radio-activity : electrical structure of matter.



## DESCRIPTIVE ENGINEERING.

*Materials of Construction.*—Structure, classification, and characteristic qualities of building stones, quarrying and blasting preparation of bricks and tiles, cementing materials, plasters, paints, and varnishes, timber, iron and steel, lead, copper and zinc and the common alloys.

*Details of Construction.*—Brick and Stone masonry, earth-work, carpentry, foundations, walls, floors and roofs of buildings, Arches, construction of masonry, wooden and iron bridges, construction and maintenance of roads.

*Electrical Engineering.* Units: conductors and cables: Heating: Lighting: Electromagnetism: Capacity: commercial instruments for measurement of pressure, current, power and energy.

D. C. Machines, alternating current: elementary principles of transformers: Synchronous machines: induction motors: converting machinery and accumulators.

This course will be accompanied by a course of Practical work in the Electro-Technical Laboratory.

*Mechanical Engineering.*—Characteristics of materials and behaviour under stress. Testing of materials. Simple stresses: live load stresses: Stress in machine parts due to simple bending: torsion of shafts. Simple helical springs: Simple Mechanisms such as the four bar mechanism and the simple slider crank chain mechanisms.

Work lost in friction: belt and rope pulleys: wheel trains: epicyclic trains. Toothed gearing: circular and diametrical pitch. Methods of cutting wheel teeth. Screws and screw cutting.

Simple cams: Steam boiler efficiencies. Boiler tests. Care and management of boilers: Steam Engine valve diagrams. Governors: Flywheel: work done in steam engine cylinder: Diagram factor: Theoretical mean effective pressure.

The Gas Engine: general description: producers and producer gas. Ignition: governing: the Petrol engine: types: ignition and other troubles in petrol engines: carburettors.

Oil Engines of the Diesel and Semi-Diesel types. Methods of starting. Atomisers: governing: testing. Humphrey gas pumps.

This course will be accompanied by a course of Practical work in the Prime Mover, and Mechanical Laboratories.

## SURVEYING.

Prismatic Compass, Level, Theodolite, and Plane Table, Topographical surveying of limited areas. Practice of levelling,

Route surveying and laying out curves. (Attested surveys executed by the candidate will be submitted to the Examiner, to which marks will be assigned.)

## DRAWING AND ESTIMATING

- (i) Freehand Drawing.
- (ii) Projection—(a) Orthographic, (b) Isometric, Topographical and Engineering Drawings.
- (iii) (a) The estimating and preparation of indents for materials of simple buildings, culverts; earthwork.  
(b) weights and costs of machine details.

*Note.*—Alternative questions on (a) and (b) to be set in the paper on Estimating. Candidates to take one section only.

7. There shall be 4 papers and 2 practical tests in Section A and 10 papers and 4 practical tests in Section B.

The subjects and marks shall be distributed as follows:—

### SECTION A (to be taken at the end of the first year)—

#### *Mathematics—*

(1) Computation, Mensuration and Statics ...	300	
(2) Differential Calculus and Plane Analytical Geometry ...	300	
		<hr/>

#### *Chemistry—*

(3) General Chemistry (Theory) ...	200	
Ditto (Practical) ...	200	
		<hr/>
		400

#### *Physics—*

(4) General Physics (Theory) ...	200	
Ditto (Practical) ...	200	
		<hr/>
		400

Total Section A ...		<hr/>	1,400
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### SECTION B—

#### GROUP I.

#### *Mathematics and Applied Physics.*

(5) Calculus and Analytical Geometry ...	300	
(6) Hydrostatics, Dynamics and Applied Mechanics ...	300	
(7) Applied Physics ...	200	
		<hr/>
		800

## GROUP II.

*Mechanical and Electrical Engineering.*

(8) Mechanical Engineering (Theoretical)	...	300	
„ „ „ Laboratory Sessional	...	200	
(9) Electrical Engineering (Theoretical)	...	300	
„ „ „ Laboratory Sessional	...	200	
		<hr/>	1,000

## GROUP III.

*Civil Engineering.*

(10) Materials of construction	...	200	
(11) Details of construction	...	400	
		<hr/>	600

## GROUP IV.

(12) Estimating	...	200	
(13) Surveying (Theoretical)	...	300	
„ „ „ Practical (Sessional work)	...	200	
(14) Drawing (Theoretical)	...	300	
„ „ „ Practical (Sessional work)	...	200	
		<hr/>	1,200
			<hr/>
			3,600

8. The order of merit on passing the Intermediate Examination in Engineering shall be determined only by the marks obtained by the candidate in Section B.

9. As soon as possible after the Intermediate Examination in Engineering the Syndicate shall publish lists in order of merit of those who have passed the Intermediate Examination in Engineering under the conditions laid down in rule 3. They shall also publish lists in alphabetical order showing the candidates who have qualified in any two groups of Section A and declaring the group in which a candidate may again have to present himself.

10. The pass marks for the Intermediate Examination in Engineering shall be one-third in each group of subjects and half of the aggregate.

11. Any candidate who has failed in one subject only, and by not more than 5 per cent. of the full marks in that subject, and has shown merit by gaining 60 per cent. or more in the aggregate of the marks of the examination, shall be allowed to pass.

12. If the Examiners are of opinion that in the case of any candidate not covered by the preceding Regulations, consideration ought to be allowed by reason of his high proficiency in a particular subject, or in the aggregate, they shall report the case to the Syndicate, and the Syndicate may pass such candidate.

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## CHAPTER LII.

### BACHELOR OF ENGINEERING.

1. An examination of the Degree of Bachelor of Engineering shall be held annually at such time and place as the Syndicate shall determine, the approximate date to be notified in the Calendar.

2. The examination shall be held in the following branches:

- (1) Civil Engineering,
- (2) Mechanical Engineering,
- (3) Electrical Engineering,
- (4) Mining Engineering,

and the Diploma shall state distinctly in which branch the candidate has qualified.

3. Any undergraduate of the University may be admitted to this examination, provided he has prosecuted a regular course of study in a College affiliated to the standard of B. E. Examination for two academical years after passing the Intermediate Examination in Engineering in class, laboratory and work-shop, in the particular branch in which he presents himself for examination.

4. A candidate shall not present himself for examination in any one year in more than one branch, but a Bachelor of Engineering who has graduated in one branch may present himself for examination in another branch, provided he has prosecuted a regular course of study in a College affiliated to the standard of the B. E. Examination for one academical year after passing the B. E. Examination in class, laboratory and workshop in the special subject of the branch in which he presents himself for examination. He shall be excused attendance and examination in subjects in which he has previously passed.

5. The B. E. Examination shall be divided into two sections as follows according to the limits laid down in paragraph 8 :—

*Non-Professional Section.*

MATHEMATICS AND SCIENCE.

*Professional Section.*

ENGINEERING AND DESIGN.

A candidate may be permitted to present himself\* for the non-professional section at the end of the first-year of the B. E. course and in the event of his failing in either of the groups, Science or Mathematics, he may be allowed to present himself again for examination in that group at the B. E. Examination. Such a candidate may obtain credit for the remaining group of the non-professional section, but he shall not be allowed to pass in the professional section, unless he has previously qualified in all groups of the non-professional section.

6. Every candidate for admission to the non-professional section of the examination shall send to the Registrar his application with a certificate in the form prescribed by the Syndicate together with a fee of Rs. 20, at least fourteen days before the date fixed for the commencement of the examination.

A similar rule shall be observed in regard to the registration of a candidate's name for the Bachelor of Engineering Examination, in which case the fee shall amount to Rs. 40, irrespective of whether the candidate has previously passed or failed in the non-professional subjects.

A candidate who fails to pass or to present himself for either examination shall not be entitled to a refund of the fee.

A candidate may be admitted to one or more subsequent examinations on payment of fee of like amounts to those above noted.

7. Every candidate shall be examined in—

- |                  |                          |
|------------------|--------------------------|
| (i) Mathematics. | (iii) Engineering.       |
| (ii) Science.    | (iv) Drawing and Design. |

The limits of the subjects shall be as follows :—

NON-PROFESSIONAL SECTION.

MATHEMATICS.

(a) *Pure.*

Series, Determinants, complex numbers, De Moivre's Theorem, Taylor's theorem for functions of two or more variables, definite integrals, double and triple integrals, differential equations, Fourier series.

*(b) Applied.*

Motion in a straight line : Simple harmonic motion : Uniplanar motion referred to polar co-ordinates : tangential and normal acceleration : motion on smooth and rough curves : motion in a resisting medium. Statics of a rigid body : virtual work : flexible chains : moments and products of inertia, D'Alembert's principle : motion about a fixed axis : motion in two dimensions : conservation of momentum and energy. Nature and general properties of fluid pressure : Thrust on plane area : centre of pressure : resultant thrust on any immersed solid and on any immersed surface in case of a homogeneous liquid at rest under gravity. Conditions for the equilibrium and for stability of equilibrium of a floating body : metacentre and metacentric height.

## SCIENCE—

## GEOLOGY.

*(For candidates in Civil Engineering and Mining Engineering only.)*

(a) *Astronomical Geology*.—Information obtained from meteorites and by the spectroscope. Probable history of the earth in its earliest stage of existence.

(b) *Geognosy*.—Probable internal condition ; evidences of pressures and internal heat.

(c) *Petrography*.—Essential and accessory constituents. Classification of rocks. Characters and essential constituent of the more important Indian rocks.

(d) *Dynamical Geology*.—Volcanic phenomena. Theories of Volcanicity. Hot springs. Earthquakes. Secular upheaval and depression. Geological functions of air. Geological functions of water and ice. Chemical and mechanical actions, denudation and deposition ; landslips. Peculiarities of Indian rivers. Lakes. Geological functions of plants and animals ; coral islands.

(e) *Petrogenetic Geology*.—Origin of coal-beds. Origin of laterite. Origin of rock-cleavage. Ore deposits : origin and classification.

(f) *Architectonic Geology*.—Forms of bedding. Surface markings. Concretion. Overlap. Groups of Strata. Joints. Strike and dip ; outcrop ; monocline ; syncline ; anticline. Faults, origin and kinds. Intrusive phase of eruptivity ; bosses, sheet, dykes, necks ; interbedded phase of eruptivity : lavas, tuffs. Unconformability.

(g) *Palæontological Geology*.—Object. Conditions for the entombment of organic remains. Preservation of organic remains in mineral masses ; fossilization. A general account of the uses of fossils in geology.

(h) *Historical Geology*.—Leading principles of stratigraphy.

(i) *Indian Geology.*

(For candidates in Civil Engineering and Mining  
Engineering only.)

*I. Pre-Cambrian History—*

1. The Archæan Group. The ancient gneisses and schists. Dome gneiss anorthosites ; the charnockite series ; norites and pegmatites. The Dharwarian system.

2. The Purana group. Lower and Upper subdivisions. Outlines of the Kaddapah, Karnul and Vindhyan system. The Unfossiliferous Rocks of the Outer Himalayas.

*II. Cambrian and Post-Cambrian History—*

3. The Dravidian Group. The Cambrians of the Salt Range. Outlines of the distribution of the Dravidian formations in the Himalayas and in Burma, the Vaikritas and Haimantas.

4. The Aryan Group. Outline of the Aryan History of the Salt Range and of the Himalayas ; the Sirmurs and Siwaliks : subdivisions and petrology. Outlines of the history of Sind, Baluchistan, and Burma during tertiary times. The Aryan history of the Peninsula. Gondwana Land ; evidences of the existence of an old Indo-African continent : Lower and Upper Gondwanas ; stages ; a more detailed account of the Raniganj, Jharria and Giridih coal-fields. The Cretaceous rocks of Madras and Assam. The Great Deccan Outburst. Laterite. Regur. The Indo-Gangetic Plain.

(j) *Field Geology.*—Geological surveying instruments. Tracing of boundaries and faults. Sections ; how to find direction and amount of dip ; Dalton's construction. Levelling ; surface profile : datum level ; bench marks ; methods of geological levelling. Lithology ; practical exercises in the identification of Indian rocks.

## MINERALOGY.

(For candidates in Civil Engineering and Mining  
Engineering only.)

(a) Properties of crystals independent and of direction.

Density and specific gravity ; methods of determining specific gravities ; hydrostatic balance ; Jolly's balance ; pycnometers ; flotation methods.

(b) Physical Crystallography—Cleavage ; fracture ; hardness.

Optical properties of minerals. Kind and degree of lustre. Double refraction and polarisation. Nicol's prism. Classification of crystals according to their optical properties.

**Examination of crystals in parallel and convergent polarized light ; Pleochroism.**

(c) **Geometrical Crystallography**—Relation of physical properties to geometrical form. Crystalline form ; faces. Planes and axes of reference ; parameters ; indices ; symbols. Law of rationality of indices. Miller's notation. Parametral form ; its selection. Symmetry ; planes and axes. Systems. Simple forms and combinations. Habit. Isomorphism and heteromorphism, Crystalline aggregates. Measurement of angles ; contract and reflecting goniometers.

(d) **Chemical Mineralogy**—Outline of classification of minerals. Group tests.

(e) **Descriptive Mineralogy**—A general description of the following minerals :—

Elements—Graphite, diamond, gold.

Sulphides—Pyrite, galena, sphalerite, chalcopyrite.

Oxides—Corundum, hematite, magnetite, quartz, cassiterite, limonite, manganese ores, bauxite.

Oxysalts :—

(i) Carbonates—Calcite, dolomite, siderite, aragonite.

(ii) Sulphates—Anhydrite, gypsum.

(iii) Phosphates—Apatite.

(iv) Silicates—Tourmaline, olivine, garnet, muscovite, biotite, talc, serpentine, pyroxene amphibol, the felspars.

Haloid salt—Halite, fluorite.

## THE TECHNICAL APPLICATIONS OF CHEMISTRY.

*(For all branches.)*

### LECTURE COURSE.

**The Chemical Technology of Brick-earths, Lime, Cements, Mortars, Porcelain, Glass, Water-hardness, Clark's Scale of hardness.** Determination of hardness, water-softening for boiler purposes, the more important paints and pigments. Tin plate, Galvanised iron, the chemistry of the Accumulator Battery.

**Metallurgy.**—Physical properties of metals and alloys. Influence of impurities on the properties of iron and copper. Effect of temperature changes on metals and alloys with special reference to steel. Annealing, hardening, tempering.

**Fuel.**—Classifications, manufacture of coke, gas producers, calorimetry, assay of coal.

**Materials.**—Ores, Fluxes, Slag : Oxidising and Reducing agents.



**Furnaces.**—Hearths for roasting and refining ; shaft furnaces ; the iron blast furnace ; cupola ; reverberatory furnaces ; cupellation ; cement : steel furnaces ; the converter ; chimney blowing engines. Cowper's and Whitwell's stoves.

**Metallurgical processes**—Classification ; outlines of typical process ; the blast process ; puddling ; Bessemer's process, acid and basic processes for the manufacture of aluminium and ferromanganese, chief processes of coppersmelting : manufacture of by-products of the smelting of sulphide ores ; methods of recovery of gold from alluvial deposits and auriferous reefs ; methods of producing sound castings.

#### PRACTICAL COURSE.

Qualitative analysis of brass, bronze, iron and iron ores, limestones, brick earths and colour washes.

Quantitative analysis—

(a) Simple gravimetric determination of Iron, Copper, Zinc, Calcium, Magnesium, Silica and Carbonic Acid.

(b) Volumetric work, simple acidimetry and alkalimetry ; determination of permanent and temporary hardness ; determination of iron by permanganate ; commercial analysis of iron.

**Metallurgy.**—Practical exercises in the preparation of common alloys and the determination of their mechanical properties ; fire-testing of the qualities of clay and brick-earth ; determination of ash, coke and sulphur in solid fuels, determination of furnace temperature by some form of pyrometer.

#### TECHNICAL CHEMISTRY AND METALLURGY.

(For Mechanical and Electrical students only.)

#### LECTURES.

Limes, Cements, Mortars, Brick-earths.

Refractory Materials.

General Metallurgy of Iron-Blast furnace.

Cupola—effect of C. Si. S. P. Mn. on cast iron.

Cement, Steel, Shear steel, Double shear steel.

Crucible steel.

Calculations.

Detailed consideration of effect of C. Si. S. P. Ni. Mn. Al. on Steel.

Bessemer's Process. Acid and Basic.

Open Hearth Process. Acid and Basic Regenerators.

Electrical Furnaces for steel making.  
 Duplex Process and Triplex Process.  
 Introduction to study of metallography of steel.  
 The heat treatment of steel—Recalescence.  
 Hardening, annealing, tempering.  
 Alloy steels, including high speed steel.  
 Corrosion of iron, steel and non-ferrous alloys.  
 Brief consideration of copper, aluminium.  
 Manganese.  
 Lead, Zink, Tin.  
 Solid, solutions, Eutectics. Liquation.  
 Alloys, Brasses, Bronzes, Bearing Metals.  
 Solders and fluxes.  
 Foundry Sands.

#### PRACTICAL WORK.

Preparation and simple mechanical testing of several common non-ferrous alloys.  
 Qualitative examination of cast iron, steel and iron.  
 Sampling.  
 Determination of calorific Power, Ash, Coke and moisture of a coal.  
 Two complete gravimetric analyses.  
 Hardness of water.  
 Metallography.

#### APPLIED PHYSICS.

*(For Civil Engineering and Mining Engineering candidates only.)*

Thermodynamics of refrigeration. Technical Thermometry. Optical Instruments. Polarised Light. The Theory of illumination. Radio-activity and discharge of electricity through gases.

The Laboratory course includes the following :—

Testing of spirit levels. Young's modulus by extensometer and by bending. Young's modulus of wires. Influence of temperature on Young's modulus. Modulus of rigidity by static and kinetic methods. Moments of inertia. Atwood's Machine Kater's physical pendulum. Pyrometric measurements ; thermal conductivity. Mechanical equivalent of heat. Photometric measurements ; intensity of emission and illumination.

*(For Mechanical and Electrical candidates only.)*

Engineering Metrology.

Measuring Tools, Micrometers, Vernier Callipers.

Micrometer depth gauges. Ames dial gauges.

Whitworth measuring Machine.

The Hirth Minimeter. Johansson Gauges.

Methods of measuring the various elements of a screw thread.

Core diameter. Effective diameter. Pitch.

Screwed rings.

Multiple Production Work.

Limit Gauges. Limits on work.

Workshop Gauges. Inspection Gauges.

Limits on Gauges.

Trigonometry of the tool room.

Jigs.

Metal-cutting tools.

Treatment of tool steels and tools.

High speed tool steels.

Case-hardening.

Precision Grinding.

Welding, etc.

#### LABORATORY WORK.

Use of measuring tools mentioned in the lecture syllabus. Measurements of the various elements of screw gauges. Testing the dimensions of various types of fine limit gauges.

Use of various measuring machines such as the Pratt and Whitney or the Newall Measuring Machine, making several types of fine limit gauges in the workshops such as

(a) Plug Gauge to an accuracy of 0.0003.

(b) Plate Gauge (gaps) to an accuracy of 0.0005.

(c) Jigs for drilling work, etc.

#### PROFESSIONAL SECTION.

##### ENGINEERING—APPLIED MECHANICS.

(For all candidates.)

##### *Definitions.*

Elasticity :—Elasticity and rigidity. Stress, its nature and intensity. Tensile, compressive, and shearing stresses. Positive

and negative senses of a stress. Stresses of uniform and variable intensities. Ultimate strength. Factor of safety.

### *Tension.*

Simple tension :—Work done in stretching a rod. Thin pipes under internal fluid pressure. Strength of prismatic solids under tensile stress when the resultant of applied forces does not coincide with the axis of the solid. Safe tensile co-efficients of various materials.

### *Compression.*

Classification of bars or pillars under compression :—Very short pillars, short pillars, long pillars, very long pillars. Methods of failure of these classes of pillars. Rondolet's, Hodgkinson's and Gordon's formulæ. Euler's formula. Fairbairn's formula for collapsing of tubes under fluid pressure. General remarks on the applicability of the above formulæ. Safe compressive co-efficients of materials usually subjected to a compressive stress : impact, pile driving.

### *Transverse Strain.*

Proof that the stress at each point varies as its distance from the neutral axis.

Determination of the position of the neutral axis.

Determination of the moment of resistance.

Calculation of moments of inertia of ordinary section used in engineering construction.

Flanged girders.—Approximate and accurate methods.

Proportion of I beams for equal strength.

Beams of uniform strength.

Bending moments and shearing forces (treated graphically and analytically).

Cantilever under single load at free end.

Cantilever under uniformly distributed load.

Cantilever under uniformly distributed load, and one or more detached loads.

Beams supported at the ends and loaded with detached loads at any point.

Beams supported at the ends and loaded uniformly.

Beams supported at the ends and loaded uniformly, and also with one or more detached loads.

Beams supported at the ends and loaded with a single detached moving load.

Beams supported at the ends supporting an uniformly distributed moving load of length less than the span.

Beams supported at the ends supporting an uniformly distributed moving load of length greater than the span.

Beams supported at the ends loaded at intermediate points. Conversion of the detached loads into equivalent uniformly distributed load. The theory of three moments for uniform beams.

### *Statics of Structures.*

Framework loaded at joints.

Triangular frames :—Diagram of forces for a single triangular frame. Triangular trusses. Cranes and dericks. Sheerlegs and tripods. Effect of the tension of the chain in cranes.

Incomplete frames :—Preliminary ideas. Simple Trapezoidal or queen post truss. General case of a funicular polygon under a vertical load. Suspension chains.

Compound frames :—Compound triangular frames for bridge trusses, Roof trusses in timber, Queen truss for large iron roofs. Diagram of force in general.

Framework girders :—Warren girders under various loads. N trusses, Bowstring girders.

Girders with redundant bars :—Lattice girders, flanged beams.

Deflection of structures, influence lines.

### *Deflection of Beams.*

Deflection due to the maximum bending moment. General equation of deflection curve. Elementary cases of deflection and slope. Beams propped in the middle. Stiffness of beams. Stiffest beam that can be cut from a circular log.

### *Shearing.*

Distinction between tangential stress and normal stress. Equality of tangential stress on planes at right angles. Tangential stress equivalent to a pair of equal and opposite normal stresses. Web of a beam of I section. Method of computing the intensity of the shearing stress at any point in a bent solid.

### *Resistance of Prismatic Solids to Simple Torsion.*

Explanation of the phenomena of simple torsion.

A circular section, solid or hollow, most favourable form of prismatic solid for resistance to torsion.

Twisting moment. The limiting intensity of the resistance to torsion is that of the shearing stress.

Investigation of the resistance of a circular prism to torsion round its mean fibre.

The strength of axles subject to simple torsion. Values of the limiting intensity of working resistance to simple torsion for different materials.

Diameter of a shaft to transmit a given power.

Extension and torsion of spiral springs.

### *Blackwork Structures.*

Stability at a plane joint. Stability of a series of blocks. Centres of pressure or resistance. Line polygon and curve of pressures. Line of resistance, or polygon of centres of pressures, moment of stability.

(For Civil Engineering Branch only.)

### *Retaining Walls,*

Theory of earth pressure. Angle of repose of different soils. Walls supporting a bank of earth with horizontal surface. Surcharged walls. Graphic methods of solution. Determination of the centre of pressure on any joint of a wall supporting a load or earth at its back. Maximum intensity of stress at any joint in a retaining wall. Minimum intensity of pressure. Tensile stress at a joint. Effect of cohesion of mortar. Connection between maximum intensity of pressure on foundation course and power of resistance of earth foundation. Methods of equalising tensile stress on foundation courses.

### *Masonry Arches.*

Definitions. Curve of pressures and line of resistance. Conditions of stability. Treatment of the weight of loads of different densities. Graphic process of determining the stability and resistance of any proposed arch by drawing the line of resistance. Depth of keystone.

### *Stability and Resistance of Abutments and Piers.*

Graphic process of determining the position of resultant pressure on any joint of an abutment. Design of piers.

Stability of foundations of structures in masonry and brick-work.

## HYDRAULICS.

(For all candidates.)

*General Principles.*

Velocity and volume of flow. Principle of continuity. Flow in a stream. Steady and varying motion of streams. Fluid acting on piston. Theorem of Bernoulli. Hydraulic head.

*The flow of Liquids through Orifices.*

Application of the theorem of Bernoulli. Velocity of flow due to given head. Co-efficient of velocity. Co-efficient of contraction. Co-efficient of discharge. Co-efficient of resistance. Connection between Co-efficient of velocity and resistance. Discharge from large rectangular orifices. Borda's mouth-piece. Co-efficient of contraction of Borda's mouth-piece obtained theoretically. Incomplete contraction. Cylindrical and conical mouth-pieces. Flow-over notches. Triangular notches. Velocity of approach. Application of results to measurement of flow in streams. Francis' formula. Discharge of measured quantities of water for irrigation purposes. Italian and Spanish modules. Other forms of apparatus answering the same purpose. Discharge under varying head. Jet pump. Separating weirs.

*The flow of Liquids in Pipes.*

Law of friction between liquids and surfaces. Froude's and Unwin's experiments. Loss of head due to friction in pipes.

Hydraulic mean depth. Variation of co-efficient with velocity and diameter. Darcy's Formula. Hydraulic gradient. Ordinary computations of size of pipes and volume of discharge. Loss of head due to bends, elbows, enlargements, etc.

*Impulse and Reaction of Water.*

Pressure of a jet on a plane surface, fixed or moving. Energy communicated to the moving surface and efficiency of jet. Velocity of surface for maximum efficiency. Resultant pressure on curved surface, direct impulse and reaction. Condition to avoid loss by shock when jet is received. Condition for least loss of kinetic energy when jet is discharged.

Accumulators, hydraulic lift, hydraulic rivetter, etc.

The Pelton wheel, Nozzels, Buckets, Impulse and Reaction Turbines, Francis turbine : Mixed flow turbine : Design of guide blades and vanes. Modern research on turbine design.

Governing, Efficiency tests.

Centrifugal Pumps—design of vanes : Centrifugal heads ; lowest speed to begin pumping.

Vortices : design of casing, Volute and whirlpool chambers : Frictional losses, Multiple lift centrifugal pump.

Efficiency tests : Reciprocating pumps : Effect of cavitation in Reciprocating pumps : Diagram of effective pressure : Air lift pumps, Air compressors.

The course in Hydraulics will be accompanied by a course of practical work in the Hydraulic laboratory.

(For Civil Engineering Branch only.)

### *Movements of Water in Canals and Rivers*

Mean velocity corresponding to given gradient. Variation of the co-efficient. Velocity at different parts of the section of the stream. Mean velocity in terms of surface and bottom velocity. Ratio of mean to maximum velocity. Forms of section of channel, circular, trapezoidal, egg-profile. Most economical section of canal with given side-slopes. Form of section for a constant velocity with varying discharge.

### IRRIGATION AND SANITARY ENGINEERING.

(For candidates in Civil Engineering only.)

Well irrigation, Canal irrigation, Inundation canals, Permanent canals, Reservoirs, Distribution of water, tank irrigation, River inundation and river improvement. Municipal water-supply. Sources of water. Quality and quantity of water, selecting sample for analysis and bacteriological examination. Collection of water—from springs, from wells, from tanks, from rivers. Purification of water. Raising and distribution of water. Intermittent and constant supply.

Drainage and sewerage, surfaces, sewers, flushing, house-drainage, urinals and latrines, disposal of sewage.

### ROADS AND RAILWAYS.

(For candidates in Civil Engineering only.)

Different classes of roads. Survey, construction and maintenance of metalled and unmetalled roads. Hill roads, bridges and culverts.



Survey, Location and Preparation of Railway Project. Construction of Formation and Permanent-way. Tunnels and Bridges. Simple Railway appliances. Rolling stock.

### THE PRINCIPLES OF ARCHITECTURAL DESIGN.

(For the Civil Engineering Course only.)

Rise and development of building in pre-classic times.

Influences on subsequent work.

*Greek Architecture.*—The orders, application, materials and methods of construction.

*Roman Architecture.*—The orders employed, use in building, the arch, vault and dome. Architectural perspective. Design. The styles arising from the Roman.

Byzantine Architecture: materials, construction and decoration; Romanesque work in Europe, Saracenic building in the East.

Gothic Architecture, its rise and development, vaulting.

Renaissance Architecture. Design.

### MECHANICAL ENGINEERING.

#### STRENGTH OF MATERIALS.

Deflection of beams.

Compound stresses, Ellipse of stress.

Combined bending and twisting. Columns Impact and live loads. Helical springs, Flat springs.

Thin Cylinders. Thick Cylinders. Testing Machines and their Calibration.

Instruments for measuring elastic strains. Special tests and Machines.

Stresses in simple framed structures.

#### THEORY OF MACHINES.

Effort, Velocity and Acceleration diagrams.

Piston Velocity and Acceleration diagrams.

Inertia of reciprocating parts. Crank effort diagrams.

Design of fly wheels.

Governors: Function of a governor, Watt and Porter.  
 Governors: Theory of governors.  
 Brakes and dynamometers.  
 Belt rope, and chain gearing.  
 Toothed gearing.  
 Cams.  
 Epicyclic trains.  
 Hooke's joint, Oldham's coupling.  
 Balancing.  
 Centrifugal force.  
 Dynamical load on a shaft.  
 Method of balancing any number of weights in one plane.  
 Primary balancing of any number of weights not in one plane.

### HEAT ENGINES.

*(For Mechanical and Electrical students only.)*

The fundamental equations of a perfect gas.  
 Adiabatic and Isothermal expansion.  
 Various Cycles. The hot air engine.  
 Otto Cycle, Dicsel Engine Cycle.  
 Thermodynamics of the Steam Engine.  
 Efficiency of a perfect Steam Engine.  
 Rankin's Cycle.  
 Throttling effects.  
 Entropy of Steam.  
 Entropy Temperature diagrams.  
 The Mollier Diagrams.  
 Applications of the entropy Temperature and the Mollier  
 Diagrams to steam engine problems.  
 Fuel Testing.—The Bomb Calorimeter.  
 Junker's Calorimeter for gas and oil.  
 Fuel Gas.—The Orsat gas analysis apparatus.  
 The automatic Co-Recording apparatus.  
 Loss of heat in flue gases.  
 The Steam Engine. Testing of the steam engine.  
 Analysis of Indicator diagrams.  
 The flash light indicator.

- Detection of faults.
- Adjustments of valves.
- Testing and adjusting indicator springs.
- Measurement of the dryness of steam.
- Various forms of dryness fraction Calorimeters.
- Effect of super-heating.
- Internal Combustion Engines.
- Testing of gas and oil engines.
- The Petrol Engine*.—Analysis of Indicator diagrams.
- Mechanical and Thermal efficiencies.
- Adjustment of spark, air supply and fuel. Heat Balances of Gas and Oil Engines.
- The Steam Turbines.—General description of various types of steam Turbines.
- Nozzles and guide blades.
- Impulse Turbines, Reaction Turbines.

#### MACHINE DESIGN.

*(For Mechanical and Electrical candidates only.)*

Design of Steam Engine, Boiler and Machine details with special reference to the manufacture of the details as well as to the strength of the parts.

#### MODERN SYSTEM OF WORKS MANAGEMENT AND ACCOUNTS.

*(For Mechanical and Electrical candidates only.)*

- Selection of site of works.
- General arrangement of works, Power, Plant, Ventilation, Humidity.
- Equipment, Staff, Routine.
- Correspondence Office.
- Production efficiency.
- Regulations affecting Employees.
- Factory Act requirements.
- Workmen's Compensation Act.
- Apprenticeship, Records.
- Time-keeping, Overtime.
- Recent researches on Fatigue.
- Drawing office, Tool room.
- Stores, Inspection, Supervision.
- Warehousing.
- Estimates.
- Works expenditure, Stock accounts.
- Shop charges, Stock-taking.

Wages accounts, Petty Cash accounts.  
 Sales accounts, Shares accounts.  
 Audit.

### HEAT ENGINES.

(For Mechanical students only.)

#### *The Steam Engine.*

Indicated weight of steam.  
 Missing quantity. Transference of the indicator diagram  
 on to the temperature-entropy diagram.  
 Valve leakage, steam consumption.  
 Willan's Law, Compound expansion.  
 Ratio of Cylinder Volumes, Cylinder dimensions.  
 Combination of indicator diagrams.  
 Flow of steam through orifices and nozzles.  
 Theory of the injector. Types of injectors.

#### *Steam Turbines.*

General Theory of the steam turbine.  
 Descriptions of turbines. Multi-stage turbines. Losses in  
 steam turbines.  
 Effect of pressure. Super-heat and vacuum on efficiency.  
 Exhaust steam turbines.

#### *Air Compressors and Motors.*

Transmission of power by compressed air.  
 Simple compressors. Two stage and three stage compres-  
 sors.  
 Air motors. Efficiencies of compressors and motors.

#### *Gas Producers.*

Various forms of producers. Theory of Producer gas.

*Heat Transmission.*—Transmission through flat plates.

Efficiency of heating surface. Transmission through the  
 walls of tubes. Effect of high speeds. Heat transmission  
 through condenser tubes.

*Gas Engines and internal combustion Engines.* Research  
 and developments. Gas Engine theory assuming variable specific  
 heat.

#### *Mechanical Refrigeration.*

Types of refrigeration machines.  
 Vapour compression machines.  
 Co-efficient of performance.  
 Tests of Refrigerators.

## THEORY OF MACHINES.

*(For Mechanical students only.)*

Valves and Valve diagrams (Graphical and analytical solutions).

Link motions, Stephenson Gooch, and Allen link motions.  
Hackworth, Marshall and Joy Valve gears, Walschaert gear.

Twisting moment diagrams.

Unions of the connecting rod.

Kinetic energy of the connecting rod.

Klein's construction.

Cyclical variation of speed.

Balancing:—

Balancing of rotating weights in more than one plane.

Primary balancing.

Balancing of locomotives.

Secondary balancing.

Balancing of petrol engines.

Governors:—

Theory of Governors.

Stability. Sensitiveness. Hunting. Spring loaded Governors.

Curves of controlling force.

Crank shaft Governors.

Whirling of shafts.

Vibrations.

## MACHINE DESIGN.

*(For Mechanical students only.)*

Students will be required to produce complete working drawings, specifications and estimates of—

- (1) a steam boiler;
- (2) a steam engine;
- (3) a gas or oil engine;
- (4) a Lathe;
- (5) a Centrifugal Pump;
- (6) a water Turbine.

The lectures will be arranged to deal with these designs in detail, special attention being given to questions of material, labour and manufacture.

## ELECTRICAL ENGINEERING.

(For all Branches.)

*The following course will be taken in a simple manner for the Civil Engineering and Mining Branches:—*

*Theoretical.*

The principles of telegraphy and telephony. Electric bells and indicators, Lightning conductors. Dynamo-Electric machinery, direct and alternate, monophase and polyphase. Types of armatures and field magnets. Reaction of armature and field. Motors; efficiency of motors and generators. Causes of loss of electric energy. Comparison with other systems of transmission of energy. Transformers. Accumulators. Electric Lighting system. Electric welding. Electric deposition of metals.

*Practical.*

Magnetic elements. Tracing of B. H. curves. Exploration of magnetic fields. Characteristics and magnetization curves of dynamos. Efficiency of dynamos and motors. Measurement of co-efficients of self-induction. Fault testing in electrical circuits. Testing lightning conductors.

*Candidates in Mechanical and Electrical Engineering will be expected to possess a more detailed and special professional knowledge of the syllabus laid down for Civil and Mining Branches.*

(For Mechanical and Electrical students only.)

*Theoretical.*

D. C. Dynamos and motors, armatures, fields, commutation armature reaction. Types.

D. C. generating stations, generators.

Booster's switch-boards, safety devices, automatic devices and equipment.

Multiple wire systems and their methods of generation.

Electric traction, lightning conductors and arresters.

D. C. pressure regulation. Paralleling of dynamos, efficiency and losses, methods of conversion from A. C. to D. C. and *vice versa*, charges to consumers, standing cost, depreciation.

Electrical estimating.

Alternating current.

Principles of A. C. inductance capacity and their effect.

Virtual maximum instantaneous and average amps. Power factor, resonance, alternators, induction motors, synchronous motors, rotary converters, Starters, Transformers. Lay-out of A. C. stations.

Transformer connections. Switchgear, safety and automatic devices, remote control gear.

Laboratory and bench tests.

- (1) Tests of commercial measuring instruments.
- (2) Tests of electrical measuring instruments.
- (3) Tests with meggers.
- (4) Characteristics of dynamos and motors.
- (5) Electrical Laboratory work to illustrate the work of the session.

Drawing.—Complete advanced Electrical Engineering.

Drawing to scale of a D. C. or A. C. Electrical Machine.

### ELECTRICAL ENGINEERING.

*(For Electrical students only.)*

Advanced D. C. and A. C. Engineering.

Periodic currents.

Precision of measurements.

Commercial instruments.

Testing and calibration.

Advanced D. C. and A. C. machinery experiments.

Photometry.

H. T. Laboratory experiments.

### ELECTRICAL ENGINEERING PROJECT.

*(For Electrical students only.)*

Completing working out of a design for an Electrical engineering project, with working drawings and calculations to a set of given data, each student having a different problem.

Lectures will be given in connection with the project on the—

Design of power houses, substations and transmission stations.

Electrical design of Dynamos, Motors, Alternators, Transformers, etc.

Advanced lectures on:—

Alternating current machinery.

Mercury arc rectifiers.

Single-phase and polyphase systems.

Hydro-electric schemes.

Long distance transmission.  
Electric Railways.  
Wireless telephony.  
Wireless telegraphy.

### MINING.

*(For candidates in Mining Engineering only.)*

#### PART I.

Geology applied to mining.  
Boring by hand and power machines.  
Sinking and lining shafts; various methods employed in special cases.  
Systems of haulage, underground and above ground; serial ropeways.  
Hoisting; head gear; ropes; safety appliances.  
Mining legislation.  
Methods of working coal; shaft-pillars, preliminary work and various methods of working the seams. Special reference to thick coal working, as practised in England and different parts of the world.  
Shot-firing; coal-cutting by machinery.  
Surface subsidence and under-sea working.  
Timbering and other supports.  
Coal-mine plans and sections; connecting surface and underground surveys.  
Prospecting for and methods of working mineral veins.  
Alluvial mining and open workings.  
Hydraulic mining; dredging for gold; ore-beds and deep-leads; overhand and underhand stopping. Hand and power; drilling; blasting; timbering.  
Metal mine plans.

#### PART II.

Descriptive mineralogy; physical properties of minerals; description of various ores and fuels; methods of determination.  
Prospecting operations.  
Drainage of mines; adit levels; pumping machinery; dams; boring against old workings.  
Ventilation of mines; natural and artificial ventilation; splitting and regulating air currents; types of fans; water-gauge and anemometer.  
Power application in a mine; discussion of relative merits of steam, water, compressed air, electricity, and oil as sources of applied power.



Description of gases found in coal-mines; colliery explosions, safety lamps; instruments for detecting firedamp; treatment of men overcome by foul air.

Arrangements of surface works at a colliery; sorting and screening coals, coalwashing; briquette making; coaking; and bye-products.

Surface work of metal mines. Sorting, crushing, sizing, and concentration of various ores. Modern ore-dressing machinery, and slime tables.

Special reference to treatment of gold, silver, copper, lead and zinc.

Cyanide and chlorine treatment of slimes.

### DRAWING AND DESIGN.

*The written test for candidates in Civil Engineering* will be confined to the preparation of detailed drawings from notes and sketches, as applied to Civil Engineering and Architecture: *for candidates in Mechanical, Electrical and Mining Engineering* it will be confined to the preparation of detailed drawings and designs from notes and sketches as applied to machinery and structures relating to these branches.

*Practical Test (for all candidates).*—Attested drawings and Designs for Engineering Works and Buildings will be submitted for examination. Marks will be allotted for field work and calculations.

8. The subjects and marks shall be distributed as follows:—

### CIVIL ENGINEERING.

*Non-Professional Section*, to be taken at the end of the first-year.

#### MATHEMATICS.

Theories	...	...	...	250	
Application	...	...	...	350	
				<hr/>	600

#### SCIENCE.

Geology and Mineralogy	...	...	200	
Applied Physics (Paper)	...	...	200	
"    "    (Practical)	...	...	150	
Technical Chemistry (Paper)	...	...	200	
"    "    (Practical)	...	...	150	
			<hr/>	900
Total Non-Professional Section	...	...		1,500

*Professional Section.*

## GROUP I.

Roads and Railways	...	...	400	
Irrigation and Sanitary Engineering	...	...	400	
Applied Mechanics	...	...	400	
Hydraulics	...	...	400	
			<hr/>	1,600

## GROUP II.

Mechanical Engineering (Paper)	...	...	400	
Ditto Laboratory work	...	...	200	
Electrical Engineering (Paper)	...	...	400	
Ditto Laboratory work	...	...	200	
			<hr/>	1,200

## GROUP III.

Attested designs for Engineering Works and Buildings	...	...	500	
Practical Drawing	...	...	300	
The Principles of Architectural Design	...	...	200	
			<hr/>	1,000

Total Professional Section ... 3,800

## MINING.

*Non-Professional Section*, to be taken at the end of the first-year.

## MATHEMATICS.

Theories	...	...	250	
Application	...	...	350	
			<hr/>	600

## SCIENCE.

Geology and Mineralogy	...	...	200	
Applied Physics (Paper)	...	...	200	
„ „ (Practical)	...	...	150	
Technical Chemistry (Paper)	...	...	200	
„ „ (Practical)	...	...	150	
			<hr/>	900
Total Non-Professional Section	...	...		1,500

*Professional Section.*

## GROUP I.

Applied Mechanics and Hydraulics	...	...	400	
Mining I	...	...	400	
Mining II	...	...	400	
			<hr/>	1,200

## GROUP II.

Mechanical Engineering (Paper)	..		400	
Ditto Laboratory work	...		200	
Electrical Engineering (Paper)	...		400	
Ditto Laboratory work	...		200	
			<hr/>	1,200

## GROUP III.

Attested Designs for Engineering Works and Buildings	...	...	500	
Practical Drawing	...	...	300	
			<hr/>	800

Total Professional Section ... 3,200

## ELECTRICAL AND MECHANICAL ENGINEERING.

*Non-Professional Section*, to be taken at the end of the first-year.

## MATHEMATICS.

Theories	...	...	250	
Application	..	...	350	
			<hr/>	600

## SCIENCE.

Technical Chemistry (Paper)	...	...	200	
" " (Practical)	...	...	150	
Applied Physics (Metrology) (Paper)	...	...	200	
" " (Practical)	...	...	150	
			<hr/>	700
Total Non-Professional Section	...	...		1,300

*Professional Section.*

## MECHANICAL ENGINEERING.

## GROUP I.

Advanced Theory of Machines	...	...	200	
„ Heat Engines	...	...	200	
Hydraulic and Pneumatic Machinery	...	...	200	
Theory of Structures	...	...	100	
Modern systems of works management and accounts	...	...	100	
			<hr/>	800

## GROUP II.

Technical Chemistry and Metallurgy (Theoretical)			150	
Ditto ditto (Practical)			250	
			<hr/>	400

## GROUP III.

Machine Design (Examination)	...	...	200	
Structural Design „	...	...	200	
			<hr/>	400

## GROUP IV.

Workshops (Sessional work)	...	...	500	
			<hr/>	500

## GROUP V.

Mechanical Engineering Laboratories (Sessional)			200	
Machine Design (Sessional)	...	...	500	
Structural Design „	...	...	200	
			<hr/>	900
Total Professional Section	...			<hr/>
				3,000

## ELECTRICAL ENGINEERING.

## GROUP I.

Paper No.				
Electrical Engineering	...	...	200	
Electrical Engineering	...	...	200	
Electrical Engineering	...	...	200	
Theory of Structures	...	...	100	
Modern system of works management and accounts	...	...	100	
			<hr/>	800

## GROUP II.

Technical Chemistry and Metallurgy :				
Paper	...	...	...	150
Practical work	...	...	...	250
				<hr/> 400

## GROUP III.

Electrical Engineering. Drawing				
(Examination)	...	...	...	200
Structural Design (Examination)	...	...	...	200
				<hr/> 400

## GROUP IV.

Workshops, Power House, Electrical Workshops				
(Sessional work)	...	...	...	500
				<hr/> 500

## GROUP V.

Electrical Engineering Lab. (Sessional)	...	200	
Electrical Engineering Project (Sessional)	...	500	
Sessional work in Structural Design	...	200	
			<hr/> 900
Total	...		<hr/> 3,000

*Professional Section.*

9. The order of merit on passing the Bachelor of Engineering Examination shall be determined by the marks obtained in the professional section only.

10. As soon as possible after the Bachelor of Engineering Examination, the Syndicate shall publish lists in order of merit of those who have passed the Bachelor of Engineering Examination in each Branch under the condition laid down in rule 5. They shall also publish lists in alphabetical order of those who have qualified in either group of the non-professional section, showing also the group in which "the candidates" may yet have to qualify.

11. The pass marks for the B. E. Examination shall be one-third in each group of subjects and half of the aggregate for a second class. Two-thirds of the marks in the professional section shall be required for a first class. The candidate who is placed first in the first class in each branch shall receive a gold medal and a prize of books to the value of Rs. 200.

12. Any candidate who has failed in one subject only, and by not more than 5 per cent. of the full marks in

that subject, and has shown merit by gaining 60 per cent. or more in the aggregate of the marks of the examination, shall be allowed to pass.

13. If the Examiners are of opinion that in the case of any candidate not covered by the preceding Regulations, consideration ought to be allowed by reason of his high proficiency in a particular subject or in the aggregate, they shall report the case to the Syndicate, and the Syndicate may pass such candidate.

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## CHAPTER LIII.

### DOCTOR OF SCIENCE (ENGINEERING).

1. Any Bachelor of Engineering of the University of Calcutta may offer himself as a candidate for the Degree of Doctor of Science (Engineering).

2. Every candidate shall state in his application the special subject within the purview of the Regulations for the Degree of Bachelor of Engineering, upon a knowledge of which he rests his qualifications for the Doctorate, and shall, with the application, transmit three copies, printed or type-written, of a thesis that he has composed, treating scientifically some special portion of the subject so stated, embodying the result of research or showing evidence of his own work, whether based on the discovery of new facts observed by himself, or of new relations of facts observed by others, or tending generally to advance engineering knowledge or practice. A thesis on a new application of scientific principles or an investigation of methods or materials of practical importance in some branch of engineering, will be taken to comply with the requirements. The candidate shall indicate generally in a preface to his thesis and specially in notes, the sources from which information is taken, the extent to which he has availed himself of the work of others, and the portions of the thesis which he claims as original; he shall further state whether his research has been conducted independently, under advice, or in co-operation with others, and in what respects his investigations appear to him to advance engineering knowledge or practice.

3. Every candidate may also forward with his application three printed copies of any original contribution or contributions to the advancement of engineering knowledge or practice, or of any cognate branch of science, which may have been published by him independently or conjointly, and upon which he relies in support of his candidature.

4. No application shall be entertained unless two Members of the Faculty of Engineering or two Doctors of Science (Engineering) shall have testified, to the satisfaction of the Syndicate, that since graduating as Bachelor of Engineering, the candidate has practised his profession with repute for five years, and that in habits and character, he is a fit and proper person for the Degree of Doctor.

5. Every candidate shall forward with his application a fee of Rs. 200. No candidate, who fails to pass or present himself for examination, shall be entitled to claim a refund of the fee.

6. The thesis mentioned in paragraph 2 and the original contributions, if any, mentioned in paragraph 3, shall be referred by the Syndicate to a Board consisting of the Dean of the Faculty of Engineering and two other persons.

7. If the thesis is approved by the Board, and if the candidate has obtained a first class at the examination for the Degree of Bachelor of Engineering, he shall not be required to submit to any further written examination; but he may be required by the Board at their discretion, to appear before them to be tested orally or practically, or by both these methods with reference to the thesis, and the special subject selected by him. The Board shall report to the Syndicate the result of the examination of the thesis, and of the oral and practical examinations, if any; and if the Syndicate, upon the report, consider the candidate worthy of the Degree of Doctor of Science (Engineering), they shall cause his name to be published with the subject of his thesis, and the titles of his published contributions (if any) to the advancement of Engineering knowledge and practice and of Science generally.

8.\* If the candidate is a person who has obtained a second class at the examination for the Degree of Bachelor of Engineering, and if his thesis is approved by the Board, he shall be required to submit to a written examination.

Two papers of three hours each shall be set, one upon the special subject mentioned in the application of the candidate and the other upon the subject of the thesis. The candidate may also be required by the Board, at their discretion, to appear before them to be tested orally or practically or by both these methods, with reference to the thesis and the special subject professed by him. The Board shall report to the Syndicate the result of the examination of the thesis and of the written examination, and also of the oral and practical examinations, if any; and if the Syndicate, upon the report, consider the candidate worthy of the Degree of Doctor of Science (Engineering), they shall cause his name to be published, with the subject of his thesis, and the titles of his published contributions (if any) to the advancement of Engineering knowledge and practice and of Science generally.

9. In the case of a candidate falling under the preceding section, if the Board, upon an examination of his thesis and of his original contribution or contributions to the advancement of Engineering knowledge and practice and of Science generally, hold the same to be generally or specifically of such special excellence as to justify the exemption of the candidate from the written examination, he may be so exempted by the Syndicate, provided that the report of the Board shall set forth the fact and the grounds of such exemption.

10. A diploma under the seal of the University, and signed by the Vice-Chancellor shall be delivered at the next Convocation for conferring degrees to each candidate who has qualified for the degree.

11. Every candidate shall be at liberty to publish his thesis and the thesis of every successful candidate shall be published by the University with the inscription: "Thesis approved for the Degree of Doctor of Science (Engineering) in the University of Calcutta."

## CHAPTER LIV.

### ACADEMICAL COSTUME.

Graduates shall wear a European dress with a College Cap, or a Chapkan and Trousers with a Shawl Pagree and Black Taz.

They also shall wear Gowns and Hoods for the several degrees as described below:—

#### *For the Degree of B.A.*

A black silk or stuff Gown. The Hood shall be of black silk or stuff, edged on the inside with a border of dark blue silk.

#### *For the Degree of B. Com.*

A black silk or stuff Gown. The Hood shall be of black silk or stuff, edged on the inside with a border of white silk.

#### *For the Degree of B.Sc.*

A black silk or stuff Gown. The Hood shall be of black silk or stuff, edged on the inside with a border of light blue silk.

#### *For the Degree of B.L.*

A black silk or stuff Gown. The Hood shall be of black silk or stuff, edged on the inside with a border of green silk.



*For the Degree of M.B.*

A black silk or stuff Gown. The Hood shall be of black silk or stuff, edged on the inside with a border of scarlet silk.

*For the Degree of B.E.*

A black silk or stuff Gown. The Hood shall be of black silk or stuff, edged on the inside with a border of orange coloured silk.

*For the Degree of B.T.*

A black silk or stuff Gown. The Hood shall be of black silk or stuff, edged on the inside with a border of purple coloured silk.

*For the Degree of Master in the Faculties of Arts,  
Science and Law.*

A black silk or stuff Gown. The Hood shall be of black silk or stuff, with a lining of silk corresponding in colour with the inside border of the Hood for Bachelors of the Faculty.

*For the Degree of Doctor in any Faculty and for the Degree of  
Master in Surgery and Master in Obstetrics.*

A deep purple silk Gown with full sleeves. The Hood shall be of scarlet silk, with a lining of satin corresponding in colour with the inside border of the Hood for the Bachelors of the Faculties.

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## APPENDIX A.

### MATRICULATION EXAMINATION.

I certify that                      aged        on the 1st of March, 192        , duly passed  
the Matriculation Examination held in the month of                      192        ,  
and was placed in the                      Division.

UNIVERSITY OF CALCUTTA :  
The                      192        .

*Controller.*

---

### INTERMEDIATE EXAMINATION IN ARTS (or SCIENCE).

I certify that                      duly passed the Intermediate Exa-  
mination in Arts (or Science) held in the month of                      192        , and  
was placed in the                      Division.

UNIVERSITY OF CALCUTTA :  
The                      192        .

*Controller.*

---

### BACHELOR OF ARTS (or SCIENCE).

#### *Pass Diploma.*

This is to certify that                      obtained the degree  
of Bachelor of Arts (or Science) in this University at the Annual Examination  
in the year 192        .

UNIVERSITY OF CALCUTTA :  
The                      192        .

*Vice-Chancellor.*

---

### BACHELOR OF ARTS (or SCIENCE).

#### *Diploma for those who pass "with distinction."*

This is to certify that                      obtained the degree  
of Bachelor of Arts (or Science) in this University with distinction at the  
Annual Examination in the year 192        .

UNIVERSITY OF CALCUTTA :  
The                      192        .

*Vice-Chancellor.*

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## BACHELOR OF ARTS (or SCIENCE).

*Honours Diploma.*

This is to certify that \_\_\_\_\_ obtained the degree  
of Bachelor of Arts (or Science) with Honours in this University at the  
Annual Examination in the year 192 , and that he was placed in the  
Class in

UNIVERSITY OF CALCUTTA :  
*The* 192 .

*Vice-Chancellor.*

---

## MASTER OF ARTS (or SCIENCE).

This is to certify that \_\_\_\_\_ obtained the degree  
of Master of Arts (or Science) in this University at the Annual Examination  
in the year 192 , the special branch in which he was examined having  
been \_\_\_\_\_ and that he was placed in the \_\_\_\_\_ Class.

UNIVERSITY OF CALCUTTA :  
*The* 192 .

*Vice-Chancellor.*

---

## BACHELOR OF COMMERCE.

This is to certify that \_\_\_\_\_ obtained the degree  
of Bachelor of Commerce in this University at the Annual Examination in  
the year 192 , and that he was placed in the \_\_\_\_\_ Division.

UNIVERSITY OF CALCUTTA :  
*The* 192 .

*Vice-Chancellor.*

---

## DOCTOR OF PHILOSOPHY.

This is to certify that \_\_\_\_\_ obtained the degree  
of Doctor of Philosophy in \_\_\_\_\_ in this University at the  
Annual Examination in the year 192 .

UNIVERSITY OF CALCUTTA :  
*The* 192 .

*Vice-Chancellor.*

---

## DOCTOR OF SCIENCE.

This is to certify that \_\_\_\_\_ obtained the degree  
of Doctor of Science in \_\_\_\_\_ in this University at the  
Annual Examination in the year 192 .

UNIVERSITY OF CALCUTTA :  
*The* 192 .

*Vice-Chancellor.*

---

## LICENTIATE IN TEACHING.

*Pass Certificate.*

This is to certify that \_\_\_\_\_ passed the Examination  
for a Licentiate in Teaching at the Annual Examination in the year 192 .

UNIVERSITY OF CALCUTTA :  
*The* 192 .

*Controller.*

---

*Certificate for those who pass with "Distinction."*

This is to certify that \_\_\_\_\_ passed with distinction  
the Examination for a Licentiate in Teaching at the Annual Examination in  
the year 192 .

UNIVERSITY OF CALCUTTA :  
*The* 192 .

*Controller.*

---

## BACHELOR OF TEACHING.

*Diploma for those who pass the Examination.*

This is to certify that \_\_\_\_\_ obtained the degree  
of Bachelor of Teaching in this University at the Annual Examination in the  
year 192 .

UNIVERSITY OF CALCUTTA :  
*The* 192 .

*Vice-Chancellor.*

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*Diploma for those who pass in First Division.*

This is to certify that \_\_\_\_\_ obtained the degree  
of Bachelor of Teaching in this University at the Annual Examination in the  
year 192 , and that he was placed in the First Division.

UNIVERSITY OF CALCUTTA :  
*The* 192 .

*Vice-Chancellor.*

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## PRELIMINARY EXAMINATION IN LAW.

This is to certify that \_\_\_\_\_ duly passed the  
Preliminary Examination in Law held in 192 , and that he was placed in  
the \_\_\_\_\_ Division.

UNIVERSITY OF CALCUTTA :  
*The* 192 .

*Controller.*

---

## INTERMEDIATE EXAMINATION IN LAW.

This is to certify that \_\_\_\_\_ duly passed the  
Intermediate Examination in Law held in 192 , and that he was  
placed in the \_\_\_\_\_ Division.

UNIVERSITY OF CALCUTTA :  
The \_\_\_\_\_ 192 .

Controller.

## BACHELOR OF LAW.

*Diploma.*

This is to certify that \_\_\_\_\_ obtained the degree  
of Bachelor of Law in this University at the Annual Examination in the  
year 192 , and that he was placed in the \_\_\_\_\_ Division.

UNIVERSITY OF CALCUTTA :  
The \_\_\_\_\_ 192 .

Vice-Chancellor.

## MASTER OF LAW.

This is to certify that \_\_\_\_\_ obtained the degree  
of Master of Law in this University at the Annual Examination in the year  
192 , and that he was placed in the \_\_\_\_\_ Class.

UNIVERSITY OF CALCUTTA :  
The \_\_\_\_\_ 192 .

Vice-Chancellor.

## DOCTOR OF LAW.

This is to certify that \_\_\_\_\_ obtained the degree  
of Doctor of Law in this University at the Annual Examination in the year  
192 .

UNIVERSITY OF CALCUTTA :  
The \_\_\_\_\_ 192 .

Vice-Chancellor.

PRELIMINARY SCIENTIFIC EXAMINATION FOR  
THE DEGREE OF M.B.

This is to certify that \_\_\_\_\_ duly passed the  
Preliminary Scientific Examination for the degree of M.B. at the Annual  
Examination in the year 192 .

UNIVERSITY OF CALCUTTA :  
The \_\_\_\_\_ 192 .

Controller.

## FIRST M. B. EXAMINATION.

This is to certify that duly passed  
the First Examination for the degree of M.B. at the Annual Examination in  
the year 192 .

UNIVERSITY OF CALCUTTA :  
The 192 .

Controller.

## FIRST M. B. EXAMINATION.

*Certificate for those who have passed with Honours.*

This is to certify that duly passed the  
First Examination for the degree of M.B. with Honours at the Annual  
Examination in the year 192 .

UNIVERSITY OF CALCUTTA :  
The 192 .

Controller.

## FINAL M. B. EXAMINATION.

*Diploma.*

This is to certify that having completed  
the curriculum of study and passed in——the examinations required by the  
Regulations of this University (sanctioned by the Governor-General of India  
in Council in accordance with the Act of Incorporation and the Indian  
Universities Act, 1904) for the Degree of Bachelor in Medicine, which has  
been duly conferred upon him, is hereby declared competent and authorised  
to practise Medicine, Surgery and Midwifery.

Dated at Calcutta, this                      day of                      192 .

Vice-Chancellor.

President of the Board of Examiners.

Controller.

(Signature of the Graduate)

## FINAL M. B. EXAMINATION.

*Diploma for those who have passed with Honours.*

This is to certify that having completed  
the curriculum of study and passed in——the examinations required by the  
Regulations of this University (sanctioned by the Governor-General of India  
in Council in accordance with the Act of Incorporation and the Indian  
Universities Act, 1904) for the Degree of Bachelor in Medicine, which has  
been duly conferred upon him, is hereby declared competent and authorised  
to practise Medicine, Surgery and Midwifery.

He obtained Honours in  
Dated at Calcutta, this                      day of                      192 .

Vice-Chancellor.

President of the Board of Examiners.

Controller.

(Signature of the Graduate)

## DOCTOR OR MASTER IN THE FACULTY OF MEDICINE.

We, the Vice-Chancellor, the Dean of the Faculty of Medicine, and the Controller of Examinations of the University of Calcutta, do hereby make known that in the year 192 , has been admitted to

the degree of Doctor of Medicine  
Master of Surgery , he having been first certified by duly  
Master of Obstetrics  
appointed Examiners to be qualified to receive the same.

*Vice-Chancellor.*

*Dean of the Faculty of Medicine.*

*Controller.*

## DIPLOMA IN PUBLIC HEALTH.

We, the Vice-Chancellor, the Dean of the Faculty of Medicine, and the Controller of Examinations of the University of Calcutta, do hereby make known that in the year 192 , has been granted the Diploma of Public Health, he having been first certified by duly appointed Examiners to be qualified to receive the same.

*Vice-Chancellor.*

*Dean of the Faculty of Medicine.*

*Controller.*

## INTERMEDIATE EXAMINATION IN ENGINEERING.

I certify that duly passed the Intermediate Examination in Engineering held in the month of 192 .

UNIVERSITY OF CALCUTTA :  
The 192 .

*Controller.*

## BACHELOR OF ENGINEERING.

*Diploma.*

This is to certify that obtained the degree of Bachelor of Engineering in this University at the Annual Examination in the year 192 , the special branch in which he was examined having been and that he was placed in the Class.

UNIVERSITY OF CALCUTTA :  
The 192 .

*Vice-Chancellor.*

## DOCTOR OF SCIENCE (ENGINEERING).

This is to certify that \_\_\_\_\_ obtained the Degree of  
 Doctor of Science (Engineering) in this University at the Annual Examination  
 in the year 192 .

UNIVERSITY OF CALCUTTA :

The \_\_\_\_\_ 192 .

Vice-Chancellor.

## MATRICULATION EXAMINATION, 192 .

[Form of application to be used only by candidates who appear as students of  
 Schools recognised by the Calcutta University.]

(This application must reach the Office of the Controller of Examinations  
 on or before 192 .)

## APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing Matriculation Exa-  
 mination of the Calcutta University.

The fee (1) of Rupees Fifteen is forwarded herewith.

I am,  
 Sir,  
 Yours obediently,

## CERTIFICATE

I certify that the above-named candidate has not already passed the  
 Entrance or Matriculation Examination  
 This certificate is to be signed by the Head Master of the School of the Calcutta University; that he has  
 from which the candidate been educated for.....years.....months  
 appears. (2) at a school recognised by the Calcutta  
 University; that his conduct has been good; that he has diligently and re-  
 gularly prosecuted his studies; that he has satisfactorily passed the periodical  
 school examinations and other tests; that, judging from the exercises that he  
 has sent up and the test examination to which he has submitted, there is,  
 in my opinion, a reasonable probability of his passing the Matriculation Exa-  
 mination; that he has signed the above application in my presence; that I  
 know nothing against his moral character; and that I believe the subjoined  
 account to be true.

(1) The fee must be paid either by Postal Money Order, or by crossed  
 cheque on a Bank, or by Remittance Transfer Receipt. On no account  
 should money be sent in registered or insured cover. Cash or notes will be  
 received only, if made over by a messenger.

(2) Under Chapter XXX, Section 2 of the Regulations, a student who  
 desires admission to the Matriculation Examination, must have been edu-  
 cated for at least one school year, previous to the date of the Examination,  
 at a school recognised by the University.



His age on the first of March next will be, to the best of my information and belief,.....years,.....months, (1)

The.....192 .

Head Master.

*Particulars to be filled in by the Candidate—*

- 1 Name—
- 2 Age in years and months—
- 3 Religion—
- 4 Race (i.e., nation, tribe, etc.)—
- 5 Where educated (2)—
- 6 Whether he has appeared at the Entrance or Matriculation Examination of any previous year—
- 7 Town or village where resident—
- 8 Name of father or guardian—
- 9 Where to be examined (3)—
- 10 Language in which besides English, to be examined (4)—
- 11 Vernacular Language (5)—
- 12 Vernacular Language from which translation is to be made into English in the 1st English paper (6)—

(1) Under Chapter XXX, Section 3 of the Regulations, no one can be admitted to the Matriculation Examination unless he shall have completed the age of fifteen years on the first day of the month in which he appears at the Examination.

(2) If a student has been transferred from one recognised school to another within the twelve months preceding the Examination, the name of each school and the period spent in each must be specified.

(3) The following places have been appointed for holding the Examination :—

Agartala, Asansole, Bagerhat, Bankura, Barisal, Berhampur, Bhowanipur, Birbhum, Bogra, Brahmanbaria, Burdwan, Calcutta, Diocesan and Bethune Colleges for female candidates, Chandpur, Chittagong, Comilla, Contai, Cooch-Bihar, Darjeeling, Debrugarh, Dhubri, Dinajpur, Faridpur, Feni, Gaibandha, Gauhati, Gopalganj, Habiganj, Howrah, Hughli, Jalpaiguri, Jamalpur, Jessore, Jorhat, Kandi, Katwa, Khulna, Kisorganj, Krishnagar, Kushtia, Madaripur, Magura, Maldah, Manikganj, Midnapur, Munsiganj, Mymensingh, Naravanganj, Netrokona, Noakhali, Pabna, Patuakhali, Pirojpur, Rampur-Boalia, Rangpur, Serajganj, Serampur, Shillong, Silchar, Sylhet, Taki and Tangail.

(4) The Languages allowed are—

Sanskrit, Pali, Arabic, Persian, Hebrew, Classical Armenian, Classical Tibetan, Greek, Latin, French, German, Syriac, Bengali, Hindi, Urdu, Assamese and Burmese, provided that a candidate may take up one of the last five languages only if it is not his vernacular.

(5) The Vernaculars allowed are—

Bengali, Hindi, Uriya, Assamese, Urdu, Burmese, Modern Armenian, Modern Tibetan, Khasi, Nepali, Maithili, Telugu, Mahrathi, Manipuri, Gujrathi, Tamil, Canarese, Malayalam, Sinhalese, Garo, Mundari, Portuguese and Persian.

A candidate, whose vernacular is not included in this list, shall have an alternative paper in English Composition or French or German.

(6) The Vernaculars recognised are—

Bengali, Hindi, Uriya, Urdu, Burmese, Modern Armenian, Modern Tibetan, Parbatia, Assamese, Khasi, French, Tamil, Gujrathi, Malayalam, Mahrathi, Maithili, Manipuri, Telugu, Sinhalese, Garo, Lushai, Canarese, Mundari, Persian, Portuguese and Chinese.

- 13 Which of the following subjects taken up (1)—  
 (i) Additional Mathematics—  
 (ii) Additional paper in Classical Language—  
 (iii) History—  
 (iv) Geography—  
 (v) Elementary Mechanics—  
 (vi) Elementary Hygiene—  
 (vii) Business Method and Correspondence—  
 (viii) Commercial Geography—
- 14 Language in which the answers in History and Hygiene will be submitted (2)—

## MATRICULATION EXAMINATION, 192 .

[Form of application to be used only by private candidates.]

(This application must reach the Office of the Controller of Examinations  
 on or before 192 .)

## APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing Matriculation Examination of the Calcutta University.

The fee (3) of Rupees Fifteen is forwarded herewith.

I am,  
 Sir,  
 Yours obediently,

Address.....

(1) Only two of these can be taken up.

(2) The Languages allowed are—

English, Bengali, Hindi, Uriya, Assamese, Urdu, Burmese, Modern Armenian.

Candidates who are certified to belong to the Hill Tribes or other Aboriginal races are allowed the choice of the following combination of subjects :—

(1) English, (2) Mathematics, (3) a Vernacular Language or the Alternative Paper in English Composition, French or German as specified above, (4) History, (5) Geography, (6) Mechanics or Additional Mathematics.

(3) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank, *or* by Remittance Transfer Receipt. On no account should money be sent in registered or insured cover. Cash or notes will be received only, if made over by a messenger.

## CERTIFICATE.

I certificate that the above-named candidate has not already passed the

This certificate is to be signed Entrance or Matriculation Examination or counter-signed by a Govern- of the Calcutta University; that he has ment Inspector of Schools.

not attended any school, recognised or non-recognised, for one year previous to the ensuing Examination; that satisfactory evidence has been adduced that his conduct has been good, that he has diligently and regularly prosecuted his studies and has been subject to proper discipline; that he has satisfactorily passed the test examination held by me or under my orders; that, judging from the test examination to which he has submitted, there is, in my opinion, a reasonable probability of his passing the Matriculation Examination; that he has signed the above application in my presence or in the presence of an Officer deputed by me; that I know nothing against his moral character; and that I believe the subjoined account to be true.

His age on the first of March next will be, to the best of my information and belief.....years,.....months.(1)

The.....192

Inspector of Schools,.....Division.

*Particulars to be filled in by the Candidate—*

- 1 Name—
- 2 Age in years and months—
- 3 Religion—
- 4 Race (*i.e.*, nation, tribe, etc.)—
- 5 Present position—
- 6 Whether he has appeared at the Entrance or Matriculation Examination of any previous year—
- 7 Town or village where resident—
- 8 Name of father or guardian—
- 9 Where to be examined (2)—
- 10 Language in which, besides English, to be examined (3)—

(1) Under Chapter XXX, Section 3 of the Regulations, no one can be admitted to the Matriculation Examination unless he shall have completed the age of fifteen years on the first day of the month in which he appears at the Examination.

(2) The following places have been appointed for holding the Examination :—

Agartala, Asansole, Bagerhat, Bankura, Barisal, Berhampur, Bhowanipur, Birbhum, Bogra, Brahmanbaria, Burdwan, Calcutta, Diocesan and Bethune Colleges for female candidates, Chandpur, Chittagong, Comilla, Contai, Cooch-Behar, Darjeeling, Debrugarh, Dhubri, Dinajpur, Faridpur, Feni, Gaibandha, Gauhati, Gopalganj, Habiganj, Howrah, Hughli, Jalpaiguri, Jamalpur, Jessore, Jorhat, Kandi, Katwa, Khulna, Kisorganj, Krishnagar, Kushtia, Madaripur, Magura, Maldah, Manikganj, Midnapur, Munsiganj, Mymensingh, Narayanganj, Netrokona, Noakhali, Pabna, Patuakhali, Pirojpur, Rampur-Baulia, Rangpur, Seraiganj, Serampur, Shillong, Silchar, Sylhet, Taki and Tangail.

(3) The Languages allowed are—

Sanskrit, Pali, Arabic, Persian, Hebrew, Classical Armenian, Classical Tibetan, Greek, Latin, French, German, Syriac, Bengali, Hindi, Urdu, Assamese and Burmese, provided that a candidate may take up one of the last five languages only if it is not his vernacular.

- 11 Vernacular Language (1) —
- 12 Vernacular Language from which translation is to be made into English in the 1st English paper (2)—
- 13 Which of the following subjects taken up (3)—
  - (i) Additional Mathematics—
  - (ii) Additional paper in Classical Language—
  - (iii) History—
  - (iv) Geography—
  - (v) Elementary Mechanics—
  - (vi) Elementary Hygiene—
  - (vii) Business method and correspondence.
  - (viii) Commercial Geography—
- 14 Language in which the answers in History and Hygiene will be submitted (4)—

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MATRICULATION EXAMINATION, 192 .

[Form of application for Female candidates.]

*(This application must reach the Office of the Controller of Examinations  
on or before 192 .)*

APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Matriculation Examination of the Calcutta University.

The fee (5) of Rupees Fifteen is forwarded herewith.

I am,  
Sir,  
Yours obediently,

---

(1) The Vernaculars allowed are—

Bengali, Hindi, Uriya, Assamese, Urdu, Burmese, Modern Armenian, Modern Tibetan, Khasi, Nepali, Maithili, Telugu, Mahrathi, Manipuri, Gujrathi, Tamil, Canarese, Malayalam, Sinhalese, Garo, Mundari, Portuguese and Persian.

A candidate, whose vernacular is not included in this list, shall have an alternative paper in English Composition or French or German.

(2) The Vernaculars recognised are—

Bengali, Hindi, Uriya, Urdu, Burmese, Modern Armenian, Modern Tibetan, Parbatia, Assamese, Khasi, French, Tamil, Gujrathi, Malayalam, Mahrathi, Maithili, Manipuri, Telugu, Sinhalese, Garo, Lushai, Kanarese, Mundari, Persian, Portuguese and Chinese.

(3) Only two of these can be taken up.

(4) The Languages allowed are—

English, Bengali, Hindi, Uriya, Assamese, Urdu, Burmese, Modern Armenian.

Candidates who are certified to belong to the Hill Tribes or other Aboriginal races are allowed the choice of the following combination of subjects :—

(1) English, (2) Mathematics, (3) a Vernacular Language or the Alternative Paper in English Composition, French or German as specified above, (4) History, (5) Geography, (6) Mechanics or Additional Mathematics.

(5) The Fee must be paid either by Postal Money Order, or by cheque on a Bank, or by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

## CERTIFICATE.

I certify that the above-named candidate has not already passed the

The certificate of every candidate who is not a private student must be signed by the Head Master or Head Mistress of the School from which she appears.

The certificate of a candidate who appears as a private student (1) must be signed by the Principal of an affiliated College or a Government Inspector of Schools or a Member of the Senate.

Entrance or Matriculation Examination of the Calcutta University; that she will have completed the age of fifteen years on the 1st day of the month in which the examination is to be held; that she has signed the above application in my presence; and that I believe the subjoined account to be true.

Signature.....

Official Designation.....

The.....192 .

*Particulars to be filled in by the Candidate—*

- 1 Name—
- 2 Religion—
- 3 Race (*i.e.*, nation, tribe, etc.)—
- 4 Where educated (2)—
- 5 Whether she has appeared at the Entrance or Matriculation Examination of any previous year—
- 6 Town or village where resident—
- 7 Name of father or guardian—
- 8 Where to be examined (3)—
- 9 Language in which, besides English, to be examined (4)—

(1) A student, who has attended any recognised school within one year previous to the Examination shall not, except with the special permission of the Syndicate, be treated as a private student.

(2) If a student has been transferred from one recognised school to another within the twelve months preceding the Examination, the name of each school and the period spent in each must be specified.

(3) The following places have been appointed for holding the Examination :—

Agartala, Asansole, Bagerhat, Bankura, Barisal, Berhampur, Bhowanipur, Birbhum, Bogra, Brahmanbaria, Burdwan, Calcutta, Diocesan and Bethune Colleges for female candidates, Chandpur, Chittagong, Comilla, Contai, Cooch-Behar, Darjeeling, Debrugarh, Dhubri, Dinajpur, Faridpur, Feni, Gaibandha, Gauhati, Gopalganj, Habiganj, Howrah, Hughli, Jalpaiguri, Jamalpur, Jessore, Jorhat, Kandi, Katwa, Khulna, Kisorganj, Krishnagar, Kushtia, Madaripur, Magura, Maldah, Manikganj, Midnapur, Munsiganj, Mymensingh, Narayanganj, Netrokona, Noakhali, Pabna, Patuakhali, Pirojpur, Rampur-Baulia, Rangpur, Serajganj, Serampur, Shillong, Silchar, Sylhet, Taki and Tangail.

(4) The Languages allowed are—

Sanskrit, Pali, Arabic, Persian, Hebrew, Classical Armenian, Classical Tibetan, Greek, Latin, Bengali, Assamese, French, Hindi, Urdu, Uriya, Burmese, Khasi, Syriac, Tamil, Telugu and German.

- 10 Vernacular Language for composition (1)—
- 11 Vernacular Language from which translation is to be made into English in the 1st English paper (2)—
- 12 Which of the following subjects taken up (3)—
  - (i) Additional Mathematics—
  - (ii) Additional paper in Classical Language—
  - (iii) History—
  - (iv) Geography—
  - (v) Elementary Mechanics—
  - (vi) Elementary Hygiene—
  - (vii) Business method and correspondence.
  - (viii) Commercial Geography.
- 13 Language in which the answers in History and Hygiene will be submitted (4)—

REGISTERED No.....OF 19 .

### INTERMEDIATE EXAMINATION IN ARTS, 192 .

[Form of application to be used only by students of affiliated Institutions.]

*(This application must reach the Office of the Controller  
on or before 192 .)*

#### APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Intermediate Examination in Arts.

The fee (5) of Rupees Thirty is forwarded herewith.

I am,  
Sir,  
Yours obediently,

#### (1) The Vernaculars allowed are—

Bengali, Hindi, Uriya, Assamese, Urdu, Burmese, Modern Armenian, Modern Tibetan, Khasi, Nepali, Maithili, Manipuri, Telugu, Mahrathi, Gujrathi, Tamil, Canarese, Malayalam, Sinhalese, Garo, Mundari, Portuguese and Persian.

A candidate, whose vernacular is not included in this list, shall have an alternative paper in English Composition or French or German.

#### (2) The Vernaculars recognised are—

Bengali, Hindi, Uriya, Urdu, Burmese, Modern Armenian, Modern Tibetan, Parbatia, Assamese, Khasi, French, Tamil, Gujrathi, Malayalam, Mahrathi, Manipuri, Maithili, Persian, Telugu, Garo, Lushai, Sinhalese, Canarese, Mundari, Portuguese and Chinese.

#### (3) Only two of these can be taken up.

#### (4) The Languages allowed are—

English, Bengali, Hindi, Uriya, Assamese, Urdu, Burmese, Modern Armenian.

Candidates who are certified to belong to the Hill Tribes or other Aboriginal races are allowed the choice of the following combination of subjects :—

(1) English, (2) Mathematics, (3) A Vernacular Language or the Alternative Paper in English Composition, French or German as specified above, (4) History, (5) Geography, (6) Mechanics or Additional Mathematics.

(5) The fee must be paid either by Postal Money Order, or by crossed cheque on a Bank, or by Remittance Transfer Receipt. On no account should money be sent in registered or insured cover. Cash or notes will be received only, if made over by a messenger.

## CERTIFICATE (1).

I certify that the above-named candidate has satisfied me by the pro-

This certificate is to be signed by the Principal of the College from which the candidate appears.

duction of the Registrar's certificate that he has passed the Entrance or Matriculation Examination of the University of Calcutta; that he has completed, in one or more of the affiliated Institutions, the course of instruction, prescribed by this University for the Intermediate Examination in Arts; that his conduct has been good; that he has diligently and regularly prosecuted his studies; that he has satisfactorily passed the college periodical examinations and other tests; that, judging from the work done by him, there is, in my opinion, a reasonable probability of his passing the Intermediate Examination in Arts; that I know nothing against his moral character; and that I believe the subjoined account to be true.

The.....192 . Principal,  
.....College.

*Particulars to be filled in by the Candidate—*

- 1 Age—
- 2 Date of passing the Entrance or Matriculation—
- 3 Race (i.e., nation, tribe, etc.)—
- 4 Religion—
- 5 Where to be examined (2)—
- 6 Whether he appeared at the First or Intermediate Examination in Arts of any previous year—If so, what year—
- 7 Subjects in which he desires to be examined (3)—

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(1) A candidate, who appears under Chapter XXVI, Section 11 of the Regulations, must produce an additional certificate from the Principal of the College in which he last studied, or from a Member of the Senate, testifying to his good conduct during the period which has elapsed since he left College.

(2) The following places have been appointed for holding the Examination :—

Bagerhat, Bankura, Barisal, Berhampur, Bhowanipur, Burdwan, Calcutta, Chittagong, Comilla, Cooch-Bihar, Daulatpur, Faridpur, Feni, Gauhati, Hughli, Krishnagar, Midnapur, Mymensingh, Narail, Pabna, Rampur-Baulia, Rangpur, Serampur and Sylhet.

(3) The Vernacular selected must be specified, and if a Classical Language is taken, it must also be named.

*Particulars to be filled in by the Principal.*

College or Colleges attended. (1)	Date of Admission.	NUMBER OF LECTURES IN									
		English		Vernacular composition or alternative subject (2)		Third Subject. (3)		Fourth Subject. (3)		Fifth Subject. (3)	
		Delivered. (4)	Attended. (4)	Delivered. (4)	Attended. (4)	Delivered. (4)	Attended. (4)	Delivered. (4)	Attended. (4)	Delivered. (4)	Attended. (4)

*Principal.*

REGISTERED No.....OF 192 .

### INTERMEDIATE EXAMINATION IN ARTS, 192 .

[Form of application to be used only by Non-Collegiate students.]

*(This application must reach the Office of the Controller on or before 192 .)*

#### APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Intermediate Examination in Arts.

The fee (5) of Rupees Thirty is forwarded herewith.

I am,

Sir,

Yours obediently,

Address.....

(1) The number of lectures delivered and attended in each College must be separately stated.

(2) Under Chap. XXVI, Sec. 1 (ii) (c), no lecture need be delivered in Vernacular Composition; but if a College delivers such lectures and insists on attendance thereat, under Chap. XXXV, Sec. 2, and Chap. XXVI, Sec. 6, the necessary percentage must be kept.

(3) The subject must be named.

(4) The number of lectures delivered and attended must be calculated with regard to the principles laid down in Sections 3, 4, 7 and 9 of Chapter XXVI of the Regulations.

(5) The fee must be paid either by Postal Money Order, or by crossed cheque on a Bank, or by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.



## CERTIFICATE.

I certify that the above-named candidate has satisfied me by the production of the Registrar's certificate that he has passed the Entrance or Matriculation Examination of the University of Calcutta; and that he has obtained special order of the Senate, under Chapter XVI, Sec. 2 of the Regulations for admission as a Non-Collegiate student to the Intermediate Examination in Arts; that his conduct has been good; that he has diligently and regularly prosecuted his studies; and that I believe the subjoined account to be true. I further certify that he has produced the annexed certificate from the Principal of an affiliated College, that he has taken in his Laboratory a practical course in accordance with the Regulations in the Science subjects in which he offers to be examined (1).

Signature.....

Dated the.....192 .

Official Designation.....

*Particulars to be filled in by the Candidate.*

- 1 Age—
- 2 Date of passing the Entrance or Matriculation—
- 3 Race (i.e., nation, tribe, etc.)—
- 4 Religion—
- 5 Present position—
- 6 Where to be examined (2)—
- 7 Whether he appeared at the First or Intermediate Examination in Arts of any previous year—If so, what year—
- 8 Subjects in which he desires to be examined (3)—

No.	
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(1) This sentence is to be crossed out if no Science subject has been taken up by the candidate.

(2) The following places have been appointed for holding the Examination :—

Bagerhat, Bankura, Barisal, Berhampur, Bhowanipur, Burdwan, Calcutta, Chittagong, Comilla, Cooch-Bihar, Daulatpur, Faridpur, Feni, Gaubati, Hughli, Krishnagar, Midnapur, Mymensingh, Narail, Pabna, Rampur-Baulia, Rangpur, Serampur and Sylhet.

(3) The Vernacular selected must be specified, and if a Classical Language taken, it must also be named.

REGISTERED No.....OF 192 .

# INTERMEDIATE EXAMINATION IN ARTS, 192 .

[Form of application to be used only by Female Candidates  
from affiliated Institutions.]

(This application must reach the Office of the Controller  
on or before 192 .)

## APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing Intermediate Examination in Arts.

The fee (1) of Rupees Thirty is forwarded herewith.

I am,  
Sir,  
Yours obediently,

## CERTIFICATE (2).

I certify that the above-named candidate has satisfied me by the pro-

This certificate is to be signed by the Principal of the College from which the candidate appears.

duction of the Registrar's Certificate that she has passed the Entrance or Matriculation Examination of the University of Calcutta; that she has completed, in one or more of the affiliated Institutions, the course of instruction, prescribed by this University for the Intermediate Examination in Arts; that her conduct has been good; that she has diligently and regularly prosecuted her studies; that she has satisfactorily passed the college periodical examinations and other tests; that judging from the work done by her, there is, in my opinion, a reasonable probability of her passing the Intermediate Examination in Arts; and that I believe the subjoined account to be true.

The.....192 . Principal,  
.....College.

(1) The fee must be paid either by Postal Money Order, or by crossed cheque on a Bank or by Remittance Transfer receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) A candidate, who appears under Chapter XXVI, Section 11 of the Regulations, must produce an additional certificate from the Principal of the College in which she last studied, or from a Member of the Senate, testifying to her good conduct during the period which has elapsed since she left College.

*Particulars to be filled in by the Candidate.*

- 1 Date of passing the Entrance or Matriculation—
- 2 Race (*i.e.*, nation, tribe, etc.)—
- 3 Religion—
- 4 Where to be examined (1)—
- 5 Whether she appeared at the First or Intermediate Examination in Arts of any previous year—If so, what year—
- 6 Subjects in which she desires to be examined (2)—

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*Particulars to be filled in by the Principal.*

College or Colleges attended. (3)	Date of Admission.	NUMBER OF LECTURES IN									
		English		Vernaculars Composition or alternative subject (4)		Third Subject. (5)		Fourth Subject. (5)		Fifth Subject. (5)	
		Delivered. (3)	Attended. (6)	Delivered. (6)	Attended. (6)	Delivered. (6)	Attended. (6)	Delivered. (6)	Attended. (6)	Delivered. (6)	Attended. (6)

*Principal.*

(1) The following places have been appointed for holding the Examination :—

Bagerhat, Bankura, Barisal, Berhampur, Bardwan, Calcutta (Bothune College and Diocesan College), Chittagong, Comilla, Cooch-Bihar, Daulatpur, Faridpur, Feni, Gauhati, Hughli, Krishnagar, Midnapur, Mymensingh, Narail, Pabna, Rampur-Baulia, Rangpur, Serampur and Sylhet.

(2) The Vernacular selected must be specified, and if a Classical Language is taken, it must also be named.

(3) The number of lectures delivered and attended in each College must be separately stated.

(4) Under Chap. XXVI, Sec. 1 (ii) (c), no lecture need be delivered in Vernacular Composition; but if a College delivers such lectures and insists on attendance thereat, under Chap. XXXII, Sec. 2, and Chap. XXVI, Sec. 6, the necessary percentage must be kept.

(5) The subject must be named.

(6) The number of lectures delivered and attended must be calculated with regard to the principles laid down in Sections 3, 4, 7 and 9 of Chapter XXVI of the Regulations.

REGISTERED No.....OF 192 .

INTERMEDIATE EXAMINATION IN ARTS, 192 .

[Form of application for Non-Collegiate Female Candidates.]

(This application must reach the Office of the Controller  
on or before 192 .)

APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing Intermediate Examination in Arts.

The fee (1) of Rupees Thirty is forwarded herewith.

I am,  
Sir,  
Yours obediently,

Address.....

CERTIFICATE.

I certify that the above-named candidate has satisfied me by the production of the Registrar's certificate that she

In the case of teachers admitted under Chap. XVI, Sec. 5, this certificate is to be signed by a Government Inspector of Schools or by the University Inspector of Colleges; in all other cases, it must be signed by a Member of the Senate.

regularly prosecuted her studies; and that I believe the subjoined account to be true. I, further, certify that she has produced the annexed certificate from the Principal of an affiliated College, that she has taken in the Laboratory a practical course in accordance with the Regulations in the Science subjects in which she offers to be examined. (2)

Signature.....

Dated the.....192 .

Official Designation.....

(1) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank *or* by Remittance Transfer receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received **only**, if made over by a messenger.

(2) This sentence is to be crossed out if no Science subject has been taken up by the candidate.

*Particulars to be filled in by the Candidate.*

- 1 Date of passing the Entrance or Matriculation—
- 2 Race (i.e., nation, tribe, etc.)—
- 3 Religion—
- 4 Present position—
- 5 Where to be examined (1)—
- 6 Whether she appeared at the First or Intermediate Examination in Arts of any previous year—If so, what year—
- 7 Subjects in which she desires to be examined (2)—

No.	
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2	
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REGISTERED NO.....OF 192 .

## INTERMEDIATE EXAMINATION IN ARTS, 192 .

*In one or two subjects only.*

[Form of application to be used only by Students of affiliated Institutions.]

*(This application must reach the Office of the Controller  
on or before 192 .)*

## APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Intermediate Examination in Arts in only.

(1) The following places have been appointed for holding the Examination :—

Bagerhat, Bankura, Barisal, Berhampur, Burdwan, Calcutta (Bothune College and Diocesan College), Chittagong, ComiKa, Cooch-Bihar, Daulatpur, Faridpur, Feni, Gauhati, Hughli, Krishnagar, Midnapur, Mymensingh, Narail, Pabna, Rampur-Baulia, Rangpur, Serampur and Sylhet.

(2) The Vernacular selected must be specified, and if a Classical Language taken, it must also be named.

The fee (1) of Rupees Thirty is forwarded herewith.

I am,  
Sir,  
Yours obediently,

CERTIFICATE (2).

I certify that the above-named candidate has satisfied me by the production of the Registrar's certificate that he has passed the Intermediate Examination in Science of the University of Calcutta; that he has completed, in one or more of the affiliated Institutions, the course of instruction, in.....only, prescribed by this University for the Intermediate Examination in Arts; that his conduct has been good; that he has diligently and regularly prosecuted his studies; that he has satisfactorily passed the College periodical examinations, and other tests; that, judging from the work done by him, there is, in my opinion, a reasonable probability of his passing the Intermediate Examination in Arts; that I know nothing against his moral character; and that I believe the subjoined account to be true.

Principal,  
The.....192 . . . . .College.

*Particulars to be filled in by the Candidate.*

- 1 Age—
  - 2 Date of passing the Entrance or Matriculation—
  - 3 Date of passing Intermediate Examination in Science—
  - 4 Race (i.e., nation, tribe, etc.)—
  - 5 Religion—
  - 6 Where to be examined (3)—
  - 7 Whether he appeared at the First or Intermediate Examination in Arts of any previous year—
  - 8 Subjects in which he desires to be examined—
  - 9 Whether he is appearing at the B.A. or B.Sc. Examination this year, if so, from what College—
1. ....
2. ....

(1) The fee must be paid *either* by Postal Money Order, or by crossed cheque on a Bank or by Remittance Transfer receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) A candidate, who appears under Chapter XXVI, Section 11 of the Regulations, must produce an additional certificate from the Principal of the College in which he last studied, or from a Member of the Senate, testifying to his good conduct during the period which has elapsed since he left College.

(3) The following places have been appointed for holding the Examination :—

Bagerhat, Bankura, Barisal, Berhampur, Bhowanipur, Burdwan, Calcutta, Chittagong, Comilla, Cooch-Bihar, Daulatpur, Faridpur, Feni, Gauhati, Hughli, Krishnagar, Midnapur, Mymensingh, Narail, Pabna, Rampur-Baulia, Rangpur, Serampur and Sylhet.

*Particulars to be filled in by the Principal.*

College or Colleges attended. (2)	Date of Admission.	NUMBER OF LECTURES IN			
		First subject (1)		Second subject (1	
		Delivered. (2)	Attended. (2)	Delivered (2)	Attended. (2)

*Principal.*

REGISTERED No.....OF 192 .

## INTERMEDIATE EXAMINATION IN ARTS, 192 .

*In one or two subjects.*

[Form of application for Non-Collegiate Students.]

*(This application must reach the Office of the Controller  
on or before 192 .)*

## APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Intermediate Examination in Arts in only.

The fee (3) of Rupees Thirty is forwarded herewith.

I am,  
Sir,  
Yours obediently,

Dated the 192 .

Signature.....

Address.....

(1) The subject must be named.

(2) The number of lectures delivered and attended must be calculated with regard to the principles laid down in Sections 3, 4, 7 and 9 of Chapter XXVI of the Regulations.

(3) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank *or* by Remittance Transfer receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

## CERTIFICATE.

I certify that the above-named candidate has satisfied me by the production of the Registrar's certificate that he

In the case of teachers admitted under Chap. XVI, Sec. 5, this certificate is to be signed by a Government Inspector of Schools or by the University Inspector of Colleges; in all other cases, it must be signed by a Member of the Senate.

has passed the Intermediate Examination in Science of the University of Calcutta; and that he has obtained special order of the Senate, under Chapter XVI, Sec. 2 of the Regulations for admission as a Non-Collegiate student to the Intermediate Examination in Arts in only; that his conduct has been good; that he has diligently and regularly prosecuted his studies; and that I believe the subjoined account to be true. I, further, certify that he has produced the annexed certificate from the Principal of an affiliated College.

Signature.....

Dated the.....192 .

Official Designation.....

*Particulars to be filled in by the Candidate.*

- 1 Age—
  - 2 Date of passing the Entrance or Matriculation—
  - 3 Date of passing the Intermediate Examination in Science—
  - 4 Race (i.e., nation, tribe, etc.)—
  - 5 Religion—
  - 6 Present position—
  - 7 Where to be examined (1)—
  - 8 Whether he has appeared in the Intermediate Examination in Arts of any previous year—
  - 9 Subjects in which he desires to be examined—
  - 10 Whether he is appearing at the B.A. or B.Sc. Examination this year, if so, from what College—
1. ....
2. ....

REGISTERED No.....OF 192 .

**B. A. EXAMINATION, 192 .**

[Form of application to be used only by Students of affiliated Institutions.]

(This application must reach the Office of the Controller  
on or before 192 .)

**APPLICATION.**

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Examination for the Degree of Bachelor of Arts.

(1) The following places have been appointed for holding the Examination :—

Bankura, Barisal, Berhampur, Burdwan, Calcutta, Chittagong, Comilla, Cooch-Bihar, Daulatpur, Faridpur, Gauhati, Hughli, Krishnagar, Midnapur, Mymensingh, Narail, Pabna, Rampur-Baulia, Rangpur, Serampur and Sylhet.



The fee (1) of Rupees Forty-five/Fifty-five (2) is forwarded herewith.

I am,  
Sir,  
Yours obediently,

### CERTIFICATE (3).

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate, that he has passed the First or Intermediate Examination in Arts of the University of Calcutta; that he has completed, in one or more of the affiliated Institutions, the course of instruction, prescribed by this University for the B.A. Examination; that his conduct has been good; that he has diligently and regularly prosecuted his studies; that he has satisfactorily passed the college periodical examinations and other tests; that, judging from the work done by him, there is, in my opinion, a reasonable probability of his passing the B.A. Examination; that I know nothing against his moral character and that I believe the subjoined account to be true.

*Principal,*

*The.....192 .*

*.....College.*

### *Particulars to be filled in by the Candidate.*

- 1 Age—
- 2 Date of passing the Entrance or Matriculation—
- 3 Date of passing the First or Intermediate Examination in Arts—
- 4 Race (*i.e.*, nation, tribe, etc.)
- 5 Religion—
- 6 Where to be examined (4)—
- 7 Whether he appeared at the B. A. Examination of any previous year—

(1) The Fee must be paid *either* by Postal Money Order, *or*, by crossed cheque on a Bank, *or* by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) The fee of Rupees Fifty-five is payable only by candidates who take up Honours.

(3) A candidate, who appears under Chapter XXVI, Section 11 of the Regulations, must produce an additional certificate from the Principal of the College in which he last studied, or from a Member of the Senate, testifying to his good conduct during the period which has elapsed since he left College.

(4) The following places have been appointed for holding the Examination:—

Bagerhat, Bankura, Barisal, Berhampur, Calcutta, Chittagong, Comilla, Cooch-Bihar, Daulatpur, Faridpur, Feni, Gauhati, Hughli, Krishnagar, Mymensingh, Rampur-Baulia, Rangpur, Serampur and Sylhet.

8 Subject in which he desires to be examined (1)

No.	PASS.	HONOURS.
1		
2		
3		

9 Subjects taken up at the Intermediate Examination in Arts—

*Particulars to be filled in by the Principal.*

College or Colleges attended. (2)	Date of Admission	NUMBER OF LECTURES IN							
		English		Vernaculars or alternative subject (3)		Third Subject. (4)		Fourth Subject. (4)	
		Delivered. (5)	Attended. (5)	Delivered. (5)	Attended. (5)	Delivered. (5)	Attended. (5)	Delivered. (5)	Attended. (5)

*Principal.*

(1) The Vernacular selected must be specified, and if a Classical Language is taken, it must also be named.

(2) The number of lectures delivered and attended in each College must be separately stated.

(3) Under Chap. XXVI, Sec. 1 (u) (c), no lecture need be delivered in Vernacular Composition; but if a College delivers such lectures and insists on attendance thereat, under Chap. XXXII, Sec. 2, and Chap. XXVI, Sec. 6, the necessary percentage must be kept.

(4) The subject must be named.

(5) The number of lectures delivered and attended must be calculated with regard to the principles laid down in Sections 3, 4, 7 and 9 of Chapter XXVI of the Regulations.

REGISTERED No.....OF 192 .

## B. A. EXAMINATION, 192 .

[Form of application to be used only by Non-Collegiate Students.]

(This application must reach the Office of the Controller  
on or before 192 .)

## APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Examination for the Degree of Bachelor of Arts.

The fee (1) of Rupees Forty-five/Fifty-five (2) is forwarded herewith.

I am,  
Sir,  
Yours obediently,

Address.....

## CERTIFICATE.

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate, that he

In the case of teachers admitted under Chap. XVI, Sec. 5, this certificate is to be signed by a Government Inspector of Schools or by the University Inspector of Colleges; in all other cases, it must be signed by a Member of the Senate.

has passed the First or Intermediate Examination in Arts of the University of Calcutta; that he has obtained special order of the Senate, under Chapter XVI, Sec. 2 of the Regulations for admission as a non-collegiate student to the B. A. Examination; that his conduct has been good; that he has diligently and regularly prosecuted his studies; that

I know nothing against his moral character; and that I believe the subjoined account to be true. I further certify that he has produced the annexed certificate from the Principal of an affiliated College, that he has taken in the Laboratory a practical course in accordance with the Regulations in the Science subjects in which he offers to be examined. (3)

Signature.....

Dated the.....192 .

Official Designation.....

(1) The fee must be paid either by Postal Money Order, or by crossed cheque on a Bank, or by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) The fee of Rupees Fifty-five is payable only by candidates who take up Honours.

(3) This sentence is to be crossed out if no Science subject has been taken up by the candidate.

*Particulars to be filled in by the Candidate.*

- 1 Age—
- 2 Date of passing the Entrance or Matriculation—
- 3 Date of passing the First or Intermediate Examination in Arts—
- 4 Race (*i.e.*, nation, tribe, etc.)—
- 5 Religion—
- 6 Present position—
- 7 Where to be examined (1)—
- 8 Whether he appeared at the B. A. Examination of any previous year—
- 9 Subjects taken up at the Intermediate Examination in Arts—
- 10 Subjects in which he desires to be examined (2)—

No.	PASS.	HONOURS.
1		
2		
3		
4		

REGISTERED NO.....OF 192 .

## B. A. EXAMINATION, 192 .

[Form of application to be used only by Female Candidates from affiliated Institutions.]

(This application must reach the Office of the Controller  
on or before 192 .)

## APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Examination for the Degree of Bachelor of Arts.

(1) The following places have been appointed for holding the Examination :—

Bagerhat, Bankura, Barisal, Berhampur, Bhowanipur, Calcutta, Chittagong, Comilla, Cooch-Behar, Daulatpur, Faridpur, Feni, Gauhati, Hughli, Krishnagar, Midnapur, Mymensingh, Rampur-Baulia, Rangpur, Serampur and Sylhet.

(2) The Vernacular selected must be specified, and if a Classical Language is taken, it must also be named.

The fee (1) of Rupees Forty-five/Fifty-five (2) is forwarded herewith.

I am,  
Sir,  
Yours obediently,

---

CERTIFICATE (3).

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate, that this certificate is to be signed by the Principal of the College from which the candidate appears. she has passed the First or Intermediate Examination in Arts of the University of Calcutta; that she has completed, in one or more of the affiliated Institutions, the course of instruction, prescribed by this University for the B.A. Examination; that her conduct has been good; that she has diligently and regularly prosecuted her studies; that she has satisfactorily passed the college periodical examinations and other tests; that, judging from the work done by her, there is, in my opinion, a reasonable probability of her passing the B.A. Examination; and that I believe the subjoined account to be true.

Principal,

The..... 192 .....

.....College.

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*Particulars to be filled in by the Candidate.*

- 1 Date of passing the Entrance or Matriculation -
- 2 Date of passing the First or Intermediate Examination in Arts -
- 3 Race (i.e., nation, tribe, etc.) -
- 4 Religion -
- 5 Where to be examined (4) -
- 6 Whether she appeared at the B.A. Examination of any previous year -
- 7 \*Subjects taken up at the Intermediate Examination in Arts -

(1) The fee must be paid *either* by Postal Money Order, or by crossed cheque on a Bank, or by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) The fee of Rupees Fifty-five is payable only by candidates who take up Honours.

(3) A candidate, who appears under Chapter XXVI, Section 11 of the Regulations, must produce an additional certificate from the Principal of the College in which she last studied or from a Member of the Senate, testifying to her conduct during the period which has elapsed since she left College.

(4) The following places have been appointed for holding the Examination :-

Bagerhat, Bankura, Barisal, Berhampur, Bhowanipur, Calcutta, Dacca and Bethune Colleges, Chittagong, Comilla, Cooch-Bihar, Daulatpur Faridpur, Feni, Gauhati, Hughli, Krishnagar, Mymensingh, Rampur-Baulia, Rangpur, Serampur and Sylhet.

## 8 Subjects in which she desires to be examined (1)—

No.	PASS.	HONOURS.
1		
2		
3		
4		

*Particulars to be filled in by the Principal.*

College or Colleges attended. (2)	Date of Admission.	NUMBER OF LECTURES IN							
		English		Vernaculars or alternative subject (3)		Third Subject. (4)		Fourth Subject. (4)	
		Delivered. (5)	Attended. (5)	Delivered. (5)	Attended. (5)	Delivered. (5)	Attended. (5)	Delivered. (5)	Attended. (5)

*Principal.*

(1) The Vernacular selected must be specified, and if a Classical Language is taken, it must also be named.

(2) The number of lectures delivered and attended in each College must be separately stated.

(3) Under Chap. XXVI, Sec. 1 (ii) (c), no lecture need be delivered in Vernacular Composition; but if a College delivers such lectures and insists on attendance thereat, under Chap. XXXII, Sec. 2, and Chap. XXVI, Sec. 6, the necessary percentage must be kept.

(4) The subject must be named.

(5) The number of lectures delivered and attended must be calculated with regard to the principles laid down in Sections 3, 4, 7 and 9 of Chapter XXVI of the Regulations.



*Particulars to be filled in by the Candidate.*

- 1 Date of passing the Entrance or Matriculation—
- 2 Date of passing the First or Intermediate Examination in Arts—
- 3 Race (*i.e.*, nation, tribe, etc.)—
- 4 Religion—
- 5 Present position—
- 6 Where to be examined (1)—
- 7 Whether she appeared at the B.A. Examination of any previous year—
- 8 Subjects taken up at the Intermediate Examination in Arts—
- 9 Subjects in which she desires to be examined (2)—

No.	PASS.	HONOURS.
1		
2		
3		

REGISTERED No.....OF 192 .

## M.A. EXAMINATION, 192 .

[Form of application for Collegiate or University Students.]

(This application must reach the Office of the Controller  
on or before 192 .)

## APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir, .

I request permission to present myself at the ensuing Examination for  
the Degree of Master of Arts in (3).....  
.....

(1) The following places have been appointed for holding the Examination :—

Bagerhat, Bankura, Barisal, Berhampur, Bhowanipur, Calcutta (Diocesan and Bethune Colleges), Chittagong, Comilla, Cooch-Behar, Daulatpur, Faridpur, Feni, Gauhati, Hughli, Krishnagar, Mymensingh, Rampur-Baulia, Rangpur, Serampur and Sylhet.

(2) The Vernacular selected must be specified, and if a Classical Language is taken, it must also be named.

(3) In a subject in which there are alternative groups or sub-divisions, the candidate must specify the alternative group or sub-division in which he desires to be examined. If a candidate desires to offer a piece of research work in lieu of examination in a part of a scientific subject, he must state the details in his application.



The fee (1) of Rupees Eighty is forwarded herewith.

I am,  
Sir,  
Yours obediently,

---

**CERTIFICATE.**

I certify that the above-named candidate has satisfied me by the production of his Diploma that he has passed the Bachelor of Arts Examination of the University of Calcutta; that he has diligently and regularly prosecuted his studies in one or more of the affiliated Institutions or under one or more of the University Professors or Lecturers as required by the Regulations; that his conduct has been good; that I know nothing against his moral character; and that I believe the subjoined account to be true.

*Signature*.....

*The*.....192      *Official Designation*.....

---

*Particulars to be filled in by the Candidate.*

- 1 Age—
- 2 Date of Entrance or Matriculation—
- 3 Date of Graduation in Arts—
- 4 Race (*i.e.*, nation, tribe, etc.)—
- 5 Religion—
- 6 Where to be examined (2)—

---

(1) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank *or* by Remittance Transfer receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) The following place has been appointed for holding the Examination :—Calcutta.

*Particulars to be filled in by the Principal or by the  
University Professor or Lecturer.*

Period or Periods of study since passing the B.A. Examination.

(1) Affiliated Institution* or Institutions, in which the candidate has studied, or a University Professor or Lecturer under whom he has studied.	Period or Periods of continuous study.	No. of Lectures.	
		Delivered (2)	Attended (2)

*Signature.....*

*Official Designation.....*

REGISTERED NO.....OF 192 .

M.A. EXAMINATION, 192 .

[Form of application for Non-Collegiate Students.]

*(This application must reach the Office of the Controller  
on or before 192 .)*

#### APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Examination for the Degree of Master of Arts in (3).....

(1) The number of lectures delivered and attended in each College or under each University Professor or Lecturer, as the case may be, must be separately stated.

(2) The number of lectures delivered and attended must be calculated with regard to the principles laid down in Sections 3, 4, 7, 9, and 12 of Chapter XXVI of the Regulations.

(3) The candidate must specify the alternative group or sub-division in which he desires to be examined. If a candidate desires to offer a piece of research work in lieu of examination in a part of a scientific subject, he must state the details in his application.



The fee (1) of Rupees Forty-five is forwarded herewith.

I am,  
Sir,  
Yours obediently

CERTIFICATE (2).

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate that he has passed the First or Intermediate Examination in Arts of the University of Calcutta; that he has completed, in one or more of the affiliated Institutions, the course of instruction, prescribed by this University for the B. Com. Examination; that his conduct has been good; that he has diligently and regularly prosecuted his studies; that he has satisfactorily passed the college periodical examinations and other tests; that judging from the work done by him, there is, in my opinion, a reasonable probability of his passing the B. Com. Examination; that I know nothing against his moral character; and that I believe the subjoined account to be true.

Principal,

The.....192 . .....College.

*Particulars to be filled in by the Candidate.*

- 1 Age—  
2 Date of passing the Entrance or Matriculation—  
3 Date of passing the First or Intermediate Examination in Arts—  
4 Race (i.e., nation, tribe, etc.)—  
5 Religion—  
6 Where to be examined (3)—  
7 Whether he appeared at the B. Com. Examination of any previous  
8 year—  
9 Optional subjects in which he desires to be examined (4)—

(1) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank *or* by Remittance Transfer receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) A candidate, who appears under Chap. XXVI, Sec. 11 of the Regulations, must produce an additional certificate from the Principal of the College in which he last studied or from a Member of the Senate, testifying to his good conduct during the period which has elapsed since he left college.

(3) The following places have been appointed for holding the Examination :—Berhampur, Calcutta.

(4) The Vernacular selected for Original Composition must be separately specified.

*Particulars to be filled in by the Principal.*

NUMBER OF LECTURES IN																	NUMBER OF LECTURES IN OPTIONAL SUBJECT				
College or Colleges attended (1) Date of admission.		Composition (2)		General Economics.		Indian Economics.		Accountancy.		Economic Geography.		Business Organisa- tion including Commercial correspondence.		Inland and Foreign Trade.		Elementary Com- mercial Law.		Subject— No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.			
Delivered (3)	Attended (3)	Delivered (3)	Attended (3)	Delivered (3)	Attended (3)	Delivered (3)	Attended (3)	Delivered (3)	Attended (3)	Delivered (3)	Attended (3)	Delivered (3)	Attended (3)	Delivered (3)	Attended (3)	Delivered (3)	Attended (3)	Delivered (3)	Attended (3)	Delivered (3)	Attended (3)

*Principal*

REGISTERED No.....OF 192 .

B. COM. EXAMINATION, 192 .

[Form of application to be used by Non-Collegiate Students only.]

(This application must reach the Office of the Controller  
on or before the 192 .)

#### APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing Examination for the Degree of Bachelor of Commerce.

The fee (4) of Rupees Forty-five is forwarded herewith.

I am,  
Sir,  
Yours obediently,

Address.....

(1) The number of lectures delivered and attended in each College must be separately stated.

(2) The Vernacular selected for Original Composition must be separately specified.

(3) The number of lectures delivered and attended must be calculated with regard to the principles laid down in Sections 3, 4, 7 and 9 of Chapter XXVI of the Regulations.

(4) The fee must be paid either by Postal Money Order, or by crossed cheque on a Bank, or by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

No application for admission to the Examination shall be entertained after the 192 even on payment of fine.

**CERTIFICATE.**

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate that he

In the case of teachers admitted under Chap. XVI, Sec. 5, this certificate is to be signed by a Government Inspector of Schools or by the University Inspector of Colleges; in all other cases, it must be signed by a Member of the Senate.

tion of the Registrar's Certificate that he has passed the First or Intermediate Examination in Arts of the University of Calcutta; that he has obtained special order of the Senate, under Chapter XVI, Sec. 2 of the Regulations for admission as a non-collegiate student to the B. Com. Examination; that his conduct has been good; that he has diligently and regularly prose-

cutted his studies; that I know nothing against his moral character; and that I believe the subjoined account to be true.

*Signature*.....

*The.....192*

Official Designation. ....

*Particulars to be filled in by the Candidate.*

- 1 Age—
- 2 Date of passing the Entrance or Matriculation—
- 3 Date of passing the First or Intermediate Examination in Arts—
- 4 Race (*i.e.*, nation, tribe, etc.)
- 5 Religion—
- 6 Present position—
- 7 Where to be examined (1)—
- 8 Whether he appeared at the B. Com. Examination of any previous  
year—
- 9 Subjects taken up at the Intermediate Examination in Arts—
- 10 Subjects in which he desires to be examined (2)—

**Compulsory.**

Optional.

No. 1.....  
No. 2.....  
No. 3.....  
No. 4.....  
No. 5.....  
No. 6.....  
No. 7.....  
No. 8.....

No. 1.....

No. 2.....  
No. 3.....  
No. 4.....  
No. 5.....  
No. 6.....  
No. 7.....  
No. 8.....

(1) The following places have been appointed for holding the Examination :—Berhampur, Calcutta.

(2) The Vernacular selected for Original Composition must be separately specified.

REGISTERED No.....OF 192 .

## INTERMEDIATE EXAMINATION IN SCIENCE, 192 .

[Form of application to be used only by Students of affiliated Institutions ]

*(This application must reach the Office of the Controller  
on or before 192 .)*

## APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Intermediate Examination in Science.

The fee (1) of Rupees Thirty is forwarded herewith.

I am,  
Sir,  
Yours obediently,

## CERTIFICATE (2).

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate, that he has passed the Entrance or Matriculation Examination of the University of Calcutta; that he has completed, in one or more of the affiliated Institutions, the course of instruction, prescribed by this University for the Intermediate Examination in Science; that his conduct has been good; that he has diligently and regularly prosecuted his studies; that he has satisfactorily passed the college periodical examinations and other tests; that, judging from the work done by him, there is, in my opinion, a reasonable probability of his passing the Intermediate Examination in Science; that I know nothing against his moral character; and that I believe the subjoined account to be true.

*Principal,**Dated the.....192 . .....College.**Particulars to be filled in by the Candidate.*

- 1 Age—
- 2 Date of passing the Entrance or Matriculation—
- 3 Race (i.e., nation, tribe, etc.)—
- 4 Religion—
- 5 Where to be examined (3)--

(1) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank *or* by Remittance Transfer receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) A candidate, who appears under Chapter XXVI, Section 11 of the Regulations, must produce an additional certificate from the Principal of the College in which he last studied or from a Member of the Senate, testifying to his good conduct during the period which has elapsed since he left College.

(3) The following places have been appointed for holding the Examination :—

Bagerhat, Bankura, Barisal, Berhampur, Bhowanipur, Burdwan, Calcutta, Chittagong, Comilla, Cooch-Behar, Daulatpur, Faridpur, Gauhati, Hughli, Krishnagar, Midnapur, Mymensingh, Narail, Pabna, Rampur-Baulia, Rangpur, Serampur and Sylhet.

- 6 Whether he appeared at the First or Intermediate Examination in Science of any previous year—If so, what year—  
 7 Subjects in which he desires to be examined (b)—

1	
2	
3	
4	
5	

- 8 Additional subject, if any, taken under Sec. 8, Chapter XXXV of the Regulations—

*Particulars to be filled in by the Principal.*

College or Colleges attended (2)	Date of Admission.	NUMBER OF LECTURES IN											
		English.	Vernaculars or alternative subject. (3)		Third Subject (4)		Fourth Subject. (4)		Fifth Subject. (4)		Sixth Subject. (4)		
			Delivered. (b)	Attended. (b)	Delivered. (b)	Attended. (b)	Delivered. (b)	Attended. (b)	Delivered. (b)	Attended. (b)	Delivered. (b)	Attended. (b)	

*Principal.*

- (1) The Vernacular selected must be specified.  
 (2) The number of lectures delivered and attended in each College must be separately stated.  
 (3) Under Chap. XXVI, Sec. 1 (ii) (c), no lecture need be delivered in Vernacular Composition; but if a College delivers such lectures and insists on attendance thereat, under Chap. XXXV, Sec. 2, and Chap. XXVI, Sec. 6, the necessary percentage must be kept.  
 (4) The subject must be named.  
 (5) The number of lectures delivered and attended must be calculated with regard to the principles laid down in Sections 3, 4, 7 and 9 of Chapter XXVI of the Regulations.



REGISTERED No.....OF 192 .

INTERMEDIATE EXAMINATION IN SCIENCE, 192 .

[Form of application to be used only by Non-Collegiate Students.]

(This application must reach the Office of the Controller  
on or before 192 .)

APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing Intermediate Examination in Science.

The fee (1) of Rupees Thirty is forwarded herewith.

I am,  
Sir,  
Yours obediently,

Address.....

CERTIFICATE.

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate, that he

In the case of teachers admitted under Chap. XVI, Sec. 5, this certificate is to be signed by a Government Inspector of Schools or by the University Inspector of Colleges; in all other cases, it must be signed by a Member of the Senate.

and has passed the Entrance or Matriculation Examination of the University of Calcutta; and that he has obtained special order of Senate, under Chapter XVI, Sec. 2 of the Regulations for admission as a Non-Collegiate Student to the Intermediate Examination in Science; that his conduct has been good; that he has diligently and regularly prosecuted his studies; that I know nothing against his moral character; and that I believe the subjoined account to be true. I, further, certify that he has produced the annexed certificate from the Principal of an affiliated College, that he has taken in the Laboratory a practical course in accordance with the Regulations in each of the Science subjects in which he offers to be examined.

Signature.....

Dated the.....192 .

Official Designation.....

Particulars to be filled in by the Candidate.

- 1 Age—
- 2 Date of passing the Entrance or Matriculation--
- 3 Race (i.e., nation, tribe, etc.)—
- 4 Religion—

(1) The fee must be paid either by Postal Money Order, or by crossed cheque on a Bank or by Remittance Transfer receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

- 5 Where to be examined (1)—  
 6 Whether he appeared at the First or Intermediate Examination in  
 Science of any previous year—If so, what year—  
 7 Subjects in which he desires to be examined (2)—

No.	
1	
2	
3	
4	
5	

8 Additional subject, if any, taken under Sec. 8, Chapter XXXV of the Regulations --

REGISTERED NO.....OF 192 .

### INTERMEDIATE EXAMINATION IN SCIENCE, 192 .

[Form of application to be used only by Female Candidates from affiliated Institutions.]

*(This application must reach the Office of the Controller  
on or before 192 .)*

#### APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Intermediate Examination in Science.

The fee (3) of Rupees Thirty is forwarded herewith.

I am,  
 Sir,  
 Yours obediently,

(1) The following places have been appointed for holding the Examination :—

Bagerhat, Bankura, Barisal, Berhampur, Bhowanipur, Burdwan, Calcutta, Chittagong, Comilla, Cooch-Behar, Daulatpur, Faridpur, Gauhati, Hughli, Krishnagar, Midnapur, Mymensingh, Narail, Pabna, Rampur-Baulia, Rangpur, Serampur and Sylhet.

(2) The Vernacular selected must be specified.

(3) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank *or* by Remittance Transfer receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

## CERTIFICATE (1).

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate, that she has passed the Entrance or Matriculation Examination of the University of Calcutta; that she has completed in one or more of the

affiliated Institutions, the course of instruction, prescribed by this University for the Intermediate Examination in Science; that her conduct has been good; that she has diligently and regularly prosecuted her studies; that she has satisfactorily passed the college periodical examinations and other tests; that, judging from the work done by her, there is, in my opinion, a reasonable probability of her passing the Intermediate Examination in Science; and that I believe the subjoined account to be true.

*Principal.*

*Dated the.....192 .*

*.....College.*

*Particulars to be filled in by the Candidate.*

- 1 Date of passing the Entrance or Matriculation—
- 2 Race (i.e., nation, tribe, etc.)—
- 3 Religion—
- 4 Where to be examined (2)—
- 5 Whether she appeared at the First or Intermediate Examination in Science of any previous year—If so, what year—
- 6 Subjects in which she desires to be examined (3) —

No.	
1	
2	
3	
4	
5	

- 7 Additional subject, if any, taken under Sec. 8, Chapter XXXV of the Regulations--

(1) A candidate, who appears under Chapter XXVI, Section 11 of the Regulations, must produce an additional certificate from the Principal of the College in which she last studied or from a Member of the Senate, testifying to her good conduct during the period which has elapsed since she left College.

(2) The following places have been appointed for holding the Examination :—

Bagerhat, Bankura, Barisal, Berhampur, Bhowanipur, Burdwan, Calcutta (Diocesan College and Bethune College), Chittagong, Comilla, Cooch-Bihar, Daulatpur, Faridpur, Feni, Gauhati, Hughli, Krishnagar, Midnapur, Mymensingh, Narail, Pabna, Rampur-Baulia, Rangpur, Serampur and Sylhet.

(3) The Vernacular selected must be specified.

*Particulars to be filled in by the Principal.*

College or Colleges attended. (1)	Date of Admission.	NUMBER OF LECTURES IN							
		English		Vernaculars or alternative subject (2)		Third Subject. (3)		Fourth Subject. (3)	
		Delivered. (4)	Attended. (4)	Delivered. (4)	Attended. (4)	Delivered. (4)	Attended. (4)	Delivered. (4)	Attended. (4)

*Principal.*

REGISTERED No.....OF 192 .

### INTERMEDIATE EXAMINATION IN SCIENCE, 192 .

[Form of application for Non-Collegiate Female Candidates.]

*(This application must reach the Office of the Controller on or before 192 .)*

#### APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Intermediate Examination in Science.

The fee (5) of Rupees Thirty is forwarded herewith.

I am,

Sir,

Yours obediently,

Address.....

(1) The number of lectures delivered and attended in each College must be separately stated.

(2) Under Chap. XXVI, Sec. 1 (ii) (c), no lecture need be delivered in Vernacular Composition; but if a College delivers such lectures and insists on attendance thereat, under Chap. XXX, Sec. 2, and Chap. XXVI, Sec. 6, the necessary percentage must be kept.

(3) The subject must be named.

(4) The number of lectures delivered and attended must be calculated with regard to the principles laid down in Sections 3, 4, 7 and 9 of Chapter XXVI of the Regulations.

(5) The fee must be paid either by Postal Money Order, or by crossed cheque on a Bank, or by Remittance transfer receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

## CERTIFICATE.

I certify that the above named candidate has satisfied me by the production of the Registrar's Certificate, that she

In the case of teachers admitted under Chap. XVI, Sec. 5, this certificate is to be signed by a Government Inspector of Schools or by the University Inspector of Colleges; in all other cases, it must be signed by a Member of the Senate.

has passed the Entrance or Matriculation Examination of the University of Calcutta; and that she has obtained special order of the the Senate, under Chapter XVI, Sec. 2 of the Regulations for admission as a Non-Collegiate student to the Intermediate Examination in Science; that her conduct has been good; that she has diligently and regularly prosecuted her studies; and that I believe the subjoined account to be true. I further certify that she has produced the annexed certificate from the Principal of an affiliated College, that she has taken in the Laboratory a practical course in accordance with the Regulations in each of the Science subjects in which she offers to be examined.

Signature.....  
Dated the.....192 . Official Designation.....

*Particulars to be filled in by the Candidate.*

- 1 Date of passing the Entrance or Matriculation—
- 2 Race (i.e., nation, tribe, etc.)—
- 3 Religion—
- 4 Where to be examined (1) —
- 5 Whether she appeared at the First or Intermediate Examination in Science of any previous year. If so, what year—
- 6 Subjects in which she desires to be examined (2)—

No.	
1	
2	
3	
4	
5	

- 7 Additional subject, if any, taken under Sec. 8, Chapter XXXV of the Regulations—

(1) The following places have been appointed for holding the Examination :—

Bagerhat, Bankura, Barisal, Berhampur, Bhowanipur, Burdwan, Calcutta (Diocesan College and Bethune College), Chittagong, Comilla, Cooch-Bihar, Daulatpur, Faridpur, Feni, Gauhati, Hughli, Krishnagar, Midnapur, Mymensingh, Narail, Pabna, Rampur-Baulia, Rangpur, Serampur and Sylhet.

(2) The Vernacular selected must be specified.

REGISTERED No.....OF 192 .

## B.Sc. EXAMINATION, 192 .

[Form of application to be used only by Students of affiliated Institutions.]

(This application must reach the Office of the Controller  
on or before 192 .)

### APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Examination for the Degree of Bachelor of Science.

The fee (1) of Rupees <sup>Forty-five</sup><sub>Fifty-five</sub> (2) is forwarded herewith.

I am,  
Sir,  
Yours obediently,

CERTIFICATE (3).

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate, that he has passed the First Examination in Arts or Intermediate Examination in Science of the University of Calcutta; that he has completed, in one or more of the affiliated Institutions, the course of instruction, prescribed by this University for the B.Sc. Examination; that his conduct has been good; that he has diligently and regularly prosecuted his studies; that he has satisfactorily passed the college periodical examinations and other tests; that, judging from the work done by him, there is, in my opinion, a reasonable probability of his passing the B.Sc. Examination; that I know nothing against his moral character; and that I believe the subjoined account to be true.

The.....192 . Principal, ..... College.

(1) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank, *or* by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) The fee of Rupees Fifty-five is payable only by candidates who take up Honours.

(3) A candidate, who appears under Chapter XXVI, Section 11 of the Regulations, must produce an additional certificate from the Principal of the College in which he last studied or from a Member of the Senate, testifying to his good conduct during the period which has elapsed since he left College.

*Particulars to be filled in by the candidate.*

- 1 Age—
- 2 Date of passing the Entrance or Matriculation—
- 3 Date of passing the First Examination in Arts or Intermediate Examination in Science—
- 4 Race (i.e., nation, tribe, etc.)—
- 5 Religion—
- 6 Where to be examined (1)—
- 7 Whether he appeared at the B.Sc. Examination of any previous year—
- 8 Subject in which he desires to be examined (2)—

No.	Pass.	Honours.
1		
2		
3		

- 9 Subjects taken up at the Intermediate Examination in Science—

*Particulars to be filled in by the Principal.*

College or Colleges attended (3)	Date of admission.	NUMBER OF LECTURES IN					
		First subject. (2)		Second subject. (2)		Third subject. (2)	
		Delivered. (4)	Attended. (4)	Delivered. (4)	Attended. (4)	Delivered. (4)	Attended. (4)

*Principal.*

(1) The following places have been appointed for holding the Examination :—

Calcutta, Berhampur, Chittagong, Daulatpur, Gauhati, Hughli, Krishnagar, Midnapur, Rampur-Baulia.

(2) The subject must be named.

(3) The number of lectures delivered and attended in each College must be separately stated.

(4) The number of lectures delivered and attended must be calculated with regard to the principles laid down in Sections 3, 4, 7 and 9 of Chapter XXVI of the Regulations.

REGISTERED No.....OF 192 .

## B.Sc. EXAMINATION, 192 .

[Form of application for Non-Collegiate Students.]

*(This application must reach the Office of the Controller  
on or before 192 .)*

## APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Examination for the Degree of Bachelor of Science.

The fee (1) of Rupees Forty-five/Fifty-five (2) is forwarded herewith.

I am,  
Sir,  
Yours obediently,

Address.....

## CERTIFICATE.

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate, that he

In the case of teachers admitted under Chap. XVI, Sec. 5, this certificate is to be signed by a Government Inspector of Schools or by the University Inspector of Colleges; in all other cases, it must be signed by a Member of the Senate.

has passed the First Examination in Arts or Intermediate Examination in Science of the University of Calcutta; that he has obtained special order of the Senate, under Chapter XVI, Sec. 2 of the Regulations for admission as a non-collegiate student to the B.Sc. Examination; that his conduct has been good; that he has diligently and regularly prosecuted his studies; that I know nothing against his moral character; and that I believe the subjoined account to be true. I further certify that he has produced the annexed certificate from the Principal of an affiliated College, that he has taken in the Laboratory a practical course in accordance with the Regulations in each of the Science subjects in which he offers to be examined.

Signature.....

The.....192 .

Official Designation.....

(1) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank, *or* by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) The fee of Rupees Fifty-five is payable only by candidates who take up Honours.



*Particulars to be filled in by the Candidate.*

- 1 Age—
- 2 Date of passing the Entrance or Matriculation—
- 3 Date of passing the First Examination in Arts or Intermediate Examination in Science—
- 4 Race (*i.e.*, nation, tribe, etc.)—
- 5 Religion—
- 6 Present position—
- 7 Where to be examined (1)—
- 8 Whether he appeared at the B.Sc. Examination of any previous year—
- 9 Subjects taken up at the Intermediate Examination in Science—
- 10 Subjects in which he desires to be examined—

No.	Pass.	Honours.
1		
2		
3		

REGISTERED No.....OF 192 .

## B.Sc. EXAMINATION, 192 .

[Form of application to be used only by Female Candidates from affiliated Institutions.]

(This application must reach the Office of the Controller  
on or before 192 .)

## APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Examination for the Degree of Bachelor of Science.

The fee (2) of Rupees Forty-five/Fifty-five (3) is forwarded herewith.

I am,  
Sir,  
Yours obediently,

(1) The following places have been appointed for holding the Examination :—

Calcutta, Berhampur, Chittagong, Daulatpur, Gauhati, Hughli, Krishnagar, Midnapur, Rampur-Baulia.

(2) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank, *or* by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(3) The fee of Rupees Fifty-five is payable only by a candidate who desires to be examined for Honours.

## CERTIFICATE (1).

I certify that the above-named candidate has satisfied me by the produc-

This certificate is to be signed by the Principal of the College from which the candidate appears.

tion of the Registrar's Certificate that she has passed the First Examination in Arts or the Intermediate Examination in Science of the University of Calcutta; that she has completed, in one or more of the affiliated Institutions, the course of instruction prescribed by this University for the B.Sc. Examination; that her conduct has been good; that she has diligently and regularly prosecuted her studies; that she has satisfactorily passed the college periodical examinations and other tests; that, judging from the work done by her, there is, in my opinion, a reasonable probability of her passing the B.Sc. Examination; and that I believe the subjoined account to be true.

Principal,

The.....192 .

.....College.

*Particulars to be filled in by the Candidate.*

- 1 Date of Entrance or Matriculation—
- 2 Date of passing the First Examination in Arts or the Intermediate Examination in Science—
- 3 Race (*i.e.*, nation, tribe, etc.)—
- 4 Religion—
- 5 Where to be examined (2)—
- 6 Whether she appeared at the B.Sc. Examination of any previous year—
- 7 Subjects in which she desires to be examined—

No.	Pass.	Honours.
1		
2		
3		

- 8 Subjects taken at the Intermediate Examination in Science—

(1) A candidate who appears under Chap. XXVI, Sec. 11 of the Regulations must produce an additional certificate from the Principal of the College in which she last studied or from a Member of the Senate testifying to her good conduct during the period which has elapsed since she left college.

(2) The following places have been appointed for holding the Examination :—

Calcutta, Chittagong, Dacca, Gauhati, Berhampur, Krishnagar, Hughli and Rampur-Baulia.

*Particulars to be filled in by the Principal.*

College or Colleges attended (1)	Date of Admission.	NUMBER OF LECTURES IN					
		First subject. (2)		Second subject. (2)		Third subject. (2)	
		Delivered. (3)	Attended. (3)	Delivered. (3)	Attended. (3)	Delivered. (3)	Attended. (3)

*Principal.*

REGISTERED No.....OF 192 .

B.Sc. EXAMINATION, 192 .

[Form of application for Non-Collegiate Female Candidates.]

(This application must reach the Office of the Controller  
on or before 192 .)

APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Examination for the Degree of Bachelor of Science.

The fee (4) of Rupees Forty-five/Fifty-five (5) is forwarded herewith.

I am,

Sir,

Yours obediently,

Address.....

(1) The number of lectures delivered and attended in each college must be separately stated.

(2) The subject must be named.

(3) The number of lectures delivered and attended must be calculated with regard to the principles laid down in Sections 3, 4, 7 and 9 of Chapter XXVI of the Regulations.

(4) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank, *or* by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(5) The fee of Rupees Fifty-five is payable only by a candidate who desires to be examined for Honours.

## CERTIFICATE.

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate that

In the case of teachers admitted under Chap. XVI, Sec. 5, this certificate is to be signed by a Government Inspector of Schools or by the University Inspector of Colleges; in all other cases, it must be signed by a Member of the Senate.

she has passed the First Examination in Arts or the Intermediate Examination in Science of the University of Calcutta; and that she has obtained special order of the Senate under Chapter XVI, Sec. 2 of the Regulations, for admission as a non-collegiate student to the B.Sc. Examination; that her conduct has been good; that she has

diligently and regularly prosecuted her studies; and that I believe the subjoined account to be true. I further certify that she has produced the annexed certificate from the Principal of an affiliated College, that she has taken in the Laboratory a practical course in accordance with the Regulations, in the science subjects in which she offers to be examined.

*Signature*.....

*The*

192 . *Official Designation*.....

*Particulars to be filled in by the Candidate.*

- 1 Date of Entrance or Matriculation—
- 2 Date of passing the First Examination in Arts or the Intermediate Examination in Science—
- 3 Race (*i.e.*, nation, tribe, etc.)—
- 4 Religion—
- 5 Present position—
- 6 Where to be examined (1)---
- 7 Whether she appeared at the B.Sc. Examination of any previous year—
- 8 Subjects in which she desires to be examined—
- 9 Subjects taken at the Intermediate Examination in Science

No.	Pass.	Honours.
1		
2		
3		
4		

(1) The following places have been appointed for holding the Examination :—

Calcutta, Chittagong, Dacca, Gauhati, Berhampur, Krishnagar, Hughli and Rampur-Baulia.

REGISTERED No.....OF 192 .

M.Sc. EXAMINATION, 192 .

[Form of application for Collegiate or University Students.]

(This application must reach the Office of the Controller  
on or before 192 .)

## APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Examination for  
the Degree of Master of Science in (1).....  
.....

The fee (2) of Rupees Eighty is forwarded herewith.

I am,  
Sir,  
Yours obediently,

## CERTIFICATE.

I certify that the above-named candidate has satisfied me by the produc-  
tion of his Diploma that he has passed theThis certificate is to be  
signed by the Principal of  
the College from which the  
candidate appears or by a  
University Professor or Lec-  
turer as the case may be.Bachelor of Science Examination of the  
University of Calcutta; that he has diligently  
and regularly prosecuted his studies in one or  
more of the affiliated Institutions or under  
one or more of the University Professors or  
Lecturers as required by the Regulations;  
that his conduct has been good; that I knownothing against his moral character; and that I believe the subjoined ac-  
count to be true.

Signature.....

The

192 .

Official Designation.....

*Particulars to be filled in by the Candidate.*

- 1 Age—
- 2 Date of Entrance or Matriculation—
- 3 Date of Graduation in Science—
- 4 Race (*i.e.*, nation, tribe, etc.)—

(1) In a subject in which there are alternative groups or sub-divisions, the candidate must specify the alternative group or sub-division in which he desires to be examined. If a candidate desires to offer a piece of research work in lieu of examination in a part of a scientific subject, he must state the details in his application.

(2) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank *or* by Remittance Transfer receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

## 5 Religion—

*Particulars to be filled in by the Principal or by the University Professor or Lecturer.*

Period or Periods of study since passing the B.Sc. Examination.

(1) Affiliated Institution or Institutions, in which the candidate has studied, or a University Professor or Lecturer under whom he has studied.	Period or Periods of continuous study.	No. of Lectures.	
		Delivered (2)	Attended (2)

*Signature*.....  
*Official Designation*.....

REGISTERED NO ..... OF 192 .

M.Sc. EXAMINATION, 192 .

[Form of application for Non-Collegiate Students.]

*(This application must reach the Office of the Controller on or before 192 .)*

## APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Examination for the Degree of Master of Science in (3).....

(1) The number of lectures delivered and attended in each College or under each University Professor or Lecturer, as the case may be, must be separately stated.

(2) The number of lectures delivered and attended must be calculated with regard to the principles laid down in Sections 3, 4, 7, 9 and 12 of Chapter XXVI of the Regulations.

(3) The candidate must specify the alternative group or sub-division in which he desires to be examined. If a candidate desires to offer a piece of research work in lieu of examination in a part of a scientific subject, he must state the details in his application.

The fee (1) of Rupees Eighty is forwarded herewith.

I am,  
Sir,  
Yours obediently,

Address.....

#### CERTIFICATE.

I certify that the above-named candidate has satisfied me by the production of his Diploma that he has passed the Bachelor of Science Examination of the University of Calcutta; that he has obtained the special order of the Senate, under Chapter XVI, Sec. 2 of the Regulations for admission as a non-collegiate student to the M.Sc. Examination; that I know nothing against his moral character; and that I believe the subjoined account to be true.

*Signature*.....  
The 192 . *Official Designation*.....

#### *Particulars to be filled in by the Candidate.*

- 1 Age—
- 2 Date of Entrance or Matriculation —
- 3 Date of Graduation in Science—
- 4 Race (*i.e.*, nation, tribe, etc.)—
- 5 Religion—
- 6 Present position—

REGISTERED No.....OF 192 .

\* L. T. EXAMINATION, 192 .

[Form of application for admission to the Examination  
for a Licentiate in Teaching.]

(This application must reach the Office of the Controller  
on or before 192 .)

#### APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Examination for Licentiate in Teaching.

(1) The Fee must be paid *either* by Postal Money Order, or by crossed cheque on a Bank or by Remittance Transfer receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

The fee (1) of Rupees Thirty is forwarded herewith.

I am,  
Sir,  
Yours obediently.

Address.....

---

**CERTIFICATE.**

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate that he has passed the First Examination in Arts or Intermediate Examination in Arts or Science of the Calcutta University; that he has attended a regular course of lectures on the Art and Theory of Teaching in a College affiliated in Teaching (2); that he has *either* undergone a course of practical training for six consecutive months at an approved Training School or has already served as a *bona-fide* Teacher in some recognised School for one academical year (3) and that I know nothing against his moral character.

The *Signature*.....  
192 . *Official Designation*.....

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*Particulars to be filled in by the Candidate.*

- 1 Age—
  - 2 Date of Entrance or Matriculation—
  - 3 Date of passing the F.A. Examination or the Intermediate Examination in Arts or Science—
  - 4 Race (*i.e.*, nation, tribe, etc.)—
  - 5 Religion—
  - 6 Present occupation—
  - 7 Address—
  - 8 Subjects offered for Practical Examination—
  - 9 Where to be examined (4)—
- 

(1) The fee must be paid *either* by Postal Money Order, or by crossed cheque on a Bank, or by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) This is to be crossed out so long as there is no College affiliated for the purpose.

(3) One of these alternatives is to be crossed out.

(4) Place for holding the Examination :—Calcutta.



REGISTERED No.....OF 192 .

## B. T. EXAMINATION, 192 .

[Form of application for admission to the Examination for the Degree of Bachelor of Teaching.]

(This application must reach the Office of the Controller  
on or before 192 .)

## APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Examination for the Degree of Bachelor of Teaching.

The fee (1) of Rupees Forty is forwarded herewith.

I am,  
Sir,  
Yours obediently,

Address.....

## CERTIFICATE.

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate that

This certificate is to be signed by the Principal of an affiliated Training College or by a Government Inspector of Schools, as the case may be.

he has passed the Examination for the Degree of Bachelor of Arts or Science of the Calcutta University; that he has attended a regular course of lectures on the Art and Theory of Teaching in a College affiliated in Teaching (2); that he has *either* undergone a course of practical training for six consecutive months at an approved Training School or has already served as a *bona-fide* Teacher in some recognised School for one academical year (3) and that I know nothing against his moral character.

Signature.....

The.....192 .

Official Designation.....

*Particulars to be filled in by the Candidate.*

- 1 Age—
- 2 Date of Entrance or Matriculation—
- 3 Date of passing the B.A. or B.Sc. Examination—

(1) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank, *or* by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) This is to be crossed out so long as there is no College affiliated for the purpose.

(3) One of these alternatives is to be crossed out.

- 4 Race (i.e., nation, tribe, etc.)—
  - 5 Religion—
  - 6 Present occupation—
  - 7 Address—
  - 8 Subjects offered for Practical Examination—
  - 9 Where to be examined (1)—
- 

REGISTERED No.....OF 192 .

PRELIMINARY EXAMINATION IN LAW, 192 .

(This application must reach the Office of the Controller  
on or before 192 .)

APPLICATION.

To the Controller of Examinations, Ca'cutta University.

Sir,

I request permission to present myself at the ensuing Preliminary Examination in Law.

The fee (2) of Rupees Thirty is forwarded herewith.

I am,  
Sir,  
Yours obediently,

---

CERTIFICATE (3).

I certify that the above-named candidate has fulfilled the requirements contemplated under Paragraph 7 of

This certificate is to be signed by the Principal of the College at which the candidate has studied. Chapter XII of the Regulations, and that I know nothing against his moral character.

Principal,

The.....192. ....College.

---

Particulars to be filled in by the Candidate—

- 1 Age—
- 2 Date of passing the B.A. or B.Sc. Examination—
- 3 Date of passing the M.A. or M.Sc. Examination—
- 4 Present occupation—
- 5 Religion—
- 6 Where to be examined (4)—

(1) Place for holding the Examination :—Calcutta.

(2) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank, *or* by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(3) A candidate who appears under Chapter XXVI, Section 11, of the Regulations, must produce an additional certificate from the Principal of the College in which he last studied or from a Member of the Senate, testifying to his good conduct during the period which has elapsed since he left College.

(4) The following places have been appointed for holding the Examination :—Calcutta and Gauhati.



REGISTERED No.....OF 192 .

# INTERMEDIATE EXAMINATION IN LAW, 192 .

(This application must reach the Office of the Controller  
on or before the 192 .)

## APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing Intermediate Examination in Law.

The fee (1) of Rupees Thirty is forwarded herewith.

I am,  
Sir,  
Yours obediently,

## CERTIFICATE (2).

I certify that the above-named candidate has fulfilled the requirements contemplated under paragraph 9 of

This certificate is to be signed by the Principal of the College at which the candidate has studied. Chapter XLI of the Regulations, and that I know nothing against his moral character.

Principal,  
The.....192 . .....College.

## Particulars to be filled in by the Candidate.

- 1 Age—
- 2 Date of passing the B.A. or B.Sc. Examination—
- 3 Date of passing the M.A. or M.Sc. Examination—
- 4 Date of passing the Preliminary Examination in Law—
- 5 Present occupation—
- 6 Religion—
- 7 Where to be examined (3)—

(1) The fee must be paid *either* by Postal Money Order, *or* by crossed should money be sent in registered or insured covers. Cash or notes will be should money be sent in registered or insured cover. Cash or notes will be received only, if made over by a messenger.

(2) A candidate who appears under Chapter XXVI, Section 11, of the Regulations, must produce an additional certificate from the Principal of the College in which he last studied or from a Member of the Senate, testifying to his good conduct during the period which has elapsed since he left College.

(3) The following places have been appointed for holding the Examination :—Calcutta and Gauhati.



REGISTERED No.....OF 192 .

FINAL EXAMINATION IN LAW, 192 .

(This application must reach the Office of the Controller  
on or before 192 .)

APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing Final Examination in Law.

The fee (1) of Rupees Thirty is forwarded herewith.

I am,  
Sir,  
Yours obediently,

CERTIFICATE (2).

I certify that the above-named candidate has fulfilled the requirements, contemplated under Paragraph 12 of Chapter XLI of the Regulations, and that I know nothing against his moral character.

Principal,

The.....192 . .....College

Particulars to be filled in by the Candidate.

- 1 Age—
- 2 Date of passing the B.A. or B.Sc. Examination—
- 3 Date of passing the M.A. or M.Sc. Examination—
- 4 Date of passing the Preliminary Examination in Law—
- 5 Date of passing the Intermediate Examination in Law—
- 6 Present occupation—
- 7 Religion—
- 8 Where to be examined (3)—

(1) The fee must be paid either by Postal Money Order, or by crossed cheque on a Bank, or by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) A candidate who appears under Chapter XXVI, Section 11, of the Regulations, must produce an additional certificate from the Principal of the College in which he last studied or from a Member of the Senate, testifying to his good conduct during the period which has elapsed since he left College.

(3) The following places have been appointed for holding the Examination :—Calcutta and Gauhati.



REGISTERED No.....OF 192 .

PRELIMINARY SCIENTIFIC M.B. EXAMINATION, 192 .

(*This application must reach the Office of the Controller  
on or before 192 .*)

APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Preliminary Scientific Examination for the Degree of Bachelor in Medicine.

The fee (1) of Rs. 25 is forwarded herewith.

I am,  
Sir,  
Yours obediently,

---

CERTIFICATE.

I certify that.....has fulfilled the requirements contemplated under Para 1,

This certificate is to be signed by the Principal of the College at which the candidate has studied. Chapter XLIV of the Regulations, and that I know nothing against his moral character.

The.....192 .

Principal.

---

*Particulars to be filled in by the Candidate.*

- 1 Age—
- 2 Date of passing the Matriculation Examination—
- 3 Date of passing the First or Intermediate Examination in Arts—
- 4 Date of passing the Intermediate Examination in Science—
- 5 Date of passing the B.Sc. Examination

Scientific subject or subjects in which the candidate has passed at the Intermediate Examination in Arts or Science or B.Sc. Examination (2) —

---

(1) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank, *or* by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) See Section 6, Chapter XLIV of the Regulations for exemptions allowed.



REGISTERED No.....OF 192 .

FINAL M.B. EXAMINATION, 192 .

(This application must reach the Office of the Controller  
on or before 192 .)

APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing First M.B. Examination.

The fee (1) of Rs. 30/60 (2) is forwarded herewith.

I am,  
Sir,  
Yours obediently,

CERTIFICATE.

I certify that.....has fulfilled the

requirements contemplated under Para 1,  
This certificate is to be signed by the Principal of the Chapter XLV of the Regulations, and that  
College at which the candidate I know nothing against his moral character.  
date has studied.

The.. ..192 .

Principal.

Particulars to be filled in by the Candidate.

- 1 Age—
  - 2 Date of passing the Preliminary Scientific M.B. Examination—
  - 3 Date of passing the Intermediate Examination in Science—
  - 4 Date of passing the B.Sc. Examination—
- Scientific subject or subjects in which the candidate has passed at the  
Intermediate Examination in Science or B.Sc. Examination (3)—  
Subject or subjects in which the candidate desires to be examined for  
Honours—

(1) The fee must be paid either by Postal Money Order, or by crossed cheque on a Bank, or by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.\*

(2) The fee of Rs. 60 is payable only by candidates who desire to be examined for Honours.

(The Examination for Honours is not held in November.)

(3) See Section 1, Chapter XLV, read with Section 6, Chapter XLIV of the Regulations.

REGISTERED No.....OF 192 .

FINAL M.B. EXAMINATION, 192 .

PART I (OLD REGULATIONS).

(This application must reach the Office of the Controller  
on or before 192 .)

APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing Final M.B. Examination, Part I.

The fee (1) of Rs. 30/60 (2) is forwarded herewith.

I am,  
Sir,  
Yours obediently,

CERTIFICATE.

I certify that.....has fulfilled the requirements contemplated under Para. 1,

This certificate is to be signed by the Principal of the College at which the candidate has studied. Chapter XLVI of the Regulations, and that I know nothing against his moral character.

The.....192 .

Principal.

Particulars to be filled in by the Candidate.

- 1 Age—
- 2 Date of passing the First M.B. Examination—
- 3 Subject or subjects in which the candidate desires to be examined for Honours—
- 4 Whether he passed in Part II previously—  
(State month and year of Examination.)

(1) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank, *or* by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) The fee of Rs. 60 is payable only by candidates who desire to be examined for Honours.

(The Examination for Honours is not held in November.)

REGISTERED No.....OF 192 .

FINAL M.B. EXAMINATION, 192 .  
PART I (NEW REGULATIONS.)

(This application must reach the Office of the Controller  
on or before 192 .)

APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing Final M.B. Examination, Part I.

The fee (1) of Rs. 30/60 (2) is forwarded herewith.

I am,  
Sir,  
Yours obediently,

CERTIFICATE.

I certify that.....has fulfilled the

This certificate is to be requirements contemplated under Para. 1,  
signed by the Principal of the Chapter XLVI of the Regulations, and that  
College at which the candidate I know nothing against his moral character.  
has studied.

The 192 .

Principal.

\* Particulars to be filled in by the Candidate.

- 1 Age—
- 2 Date of passing the First M.B. Examination—
- 3 Subject or subjects in which the candidate desires to be examined  
for Honours—
- 4 Whether he passed in Part II previously—  
(State month and year of Examination.)
- 5 Whether he is appearing in one subject only of Part I, if so, state 1st  
chance or 2nd chance.

(1) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank, *or* by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) The fee of Rs. 60 is payable only by candidates who desire to be examined for Honours.

(The Examination for Honours is not held in November.)

REGISTERED No.....OF 192 .

FINAL M.B. EXAMINATION, 192 .  
PART II (OLD REGULATIONS).

(This application must reach the Office of the Controller  
on or before 192 .)

APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing Final M.B. Examination, Part II.

The fee (1) of Rs. 30, 60 (2) is forwarded herewith.

I am,  
Sir,  
Yours obediently,

CERTIFICATE.

I certify that.....has fulfilled the

This certificate is to be signed by the Principal of the College at which the candidate has studied.

requirements contemplated under Para 1, Chapter XLVI of the Regulations, and that I know nothing against his moral character.

The.....192 .

Principal.

Particulars to be filled in by the Candidate.

- 1 Age---
- 2 Date of passing the First M.B. Examination
- 3 Subject or subjects in which the candidate passed at the previous Examination--
- 4 Subject or subjects in which the candidate desires to be examined for Honours--
- 5 Whether he passed in Part I previously--  
(State month and year of Examination.)

(1) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank, *or* by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) The fee of Rs. 60 is payable only by candidates who desire to be examined for Honours.

(The Examination for Honours is not held in November.)

REGISTERED No.....OF 192 .

FINAL M.B. EXAMINATION, 192 .  
PART II (NEW REGULATIONS).

(This application must reach the Office of the Controller  
on or before 192 .)

APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing Final M.B. Examination, Part II.

The fee (1) of Rs. 30/60 (2) is forwarded herewith.

I am,  
Sir,  
Yours obediently,

---

CERTIFICATE.

I certify that.....has fulfilled the

This certificate is to be signed by the Principal of the College at which the candidate has studied.

requirements contemplated under Para. 1, Chapter XLVI of the Regulations, and that I know nothing against his moral character.

The.....192 .

Principal.

---

Particulars to be filled in by the Candidate.

- 1 Age—
  - 2 Date of passing the First M.B. Examination—
  - 3 Subject or subjects in which the candidate passed at the previous Examination ..
  - 4 Whether he passed in Part I previously—  
(State month and year of Examination.)
- 

(1) The fee must be paid *either* by Postal Money Order, *or* by crossed cheque on a Bank, *or* by Remittance Transfer Receipt.. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) The fee of Rs. 60 is payable only by candidates who desire to be examined for Honours.

(The Examination for Honours is not held in November.)

REGISTERED No.....OF 192 .

FINAL M.B. EXAMINATION, 192 , PARTS I AND II.

(This application must reach the Office of the Controller  
on or before the 192 .)

APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing Final M.B. Examination, Parts I and II.

The fee (1) of Rs. 50/80 (2) is forwarded herewith.

I am,  
Sir,  
Yours obediently,

CERTIFICATE.

I certify that.....has fulfilled the

This certificate is to be signed by the Principal of the College at which the candidate has studied. requirements contemplated under Para. 1, Chapter XLVI of the Regulations, and that I know nothing against his moral character.

The.....192 .

Principal.

Particulars to be filled in by the Candidate.

- 1 Age—
- 2 Date of passing the First M.B. Examination—
- 3 Subject or subjects in which the candidate desires to be examined for Honours—
- 4 Whether he passed previously in any subject of Part II and if so, which—
- 5 State month and year of Examination in Part II—

(1) The fee must be paid either by Postal Money Order, or by crossed cheque on a Bank, or by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

(2) The fee of Rs. 80 is payable only by candidates, who desire to be examined for Honours.

(The Examination for Honours are not held in November.)

REGISTERED No.....OF 192 .

D. P. H. EXAMINATION, 192 .

PART I.

*(This application must reach the Office of the Controller  
on or before , 192 .*

APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself for the ensuing Examination for Diploma in Public Health, Part I.

The Certificates, required in Section 2 (i) and (c) of Chapter I of the University Regulations are herewith submitted.

The fee of Rs. 100 is forwarded herewith.

Dated the.....192 .

I am,  
Sir,  
Yours obediently,

Signature.....

Address.....

CERTIFICATE.

I certify that.....since passing the

This certificate is to be signed by the Principal of the College or the Head of an Institution from which the candidate appears.

M.B. or L.M.S. Examination, has completed .....years' continuous practice of the medical profession and has satisfied the requirements laid down in Section 2 (i) and (c) of Chapter I of the Regulations.

Dated the.....192 .

Signature.....  
Designation.....

REGISTERED No ..... OF 192 .

D. P. H. EXAMINATION, 192 .

PART II.

*(This application must reach the Office of the Controller  
on or before 192 .)*

APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself for the ensuing Examination for Diploma in Public Health, Part II.

The Certificates, required in Section 2 (ii), (iii), (iv) and (c) of Chapter I of the University Regulations, are herewith submitted.

The fee of Rs. 100 is forwarded herewith.\*

Dated the.....192 .

I have, etc.  
Sir,  
Yours obediently.

## CERTIFICATE.

I certify that....., since passing the M.B. or L.M.S. Examination, has completed.....years' continuous practice of the medical profession and has satisfied the requirements laid down in Sec. 2 (ii), (iii), (iv) and (v) of Chapter L of the Regulations and that in habits and character he is a fit and proper person to receive the Diploma in Public Health.  
He passed in Part I of the Examination in.....

Dated the.....192 .

Signature.....

Designation.....

REGISTERED No.....OF 192 .

## M.D. EXAMINATION, 192 .

(This application must reach the Office of the Controller  
on or before 192 .)

## APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself for the ensuing Examination for the Degree of Doctor of Medicine.

The Certificates, required in Section 2 (or in Section 8), Chapter XLVII of the University Regulations, are herewith submitted.

The fee of Rs. 200 is forwarded herewith.

I also beg to submit with this application three copies of my thesis or published work, embodying the results of independent research and having definite relation to the subjects of Medicine, Pathology or Mental diseases.

I have, etc.,

Signature.....

Dated the.....192 .

Address.....

## CERTIFICATE.

We certify that.....

This certificate is to be signed by two members of the Faculty of Medicine or by two Doctors of Medicine. since graduating as Bachelor of Medicine or since passing the L.M.S. Examination, has practised his Profession with repute for the period of.....years, and that in habits and character he is a fit and proper person for the Degree of Doctor of Medicine.

I have, etc.,

Signature (1).....

Dated the.....192 .

Signature (2).....



REGISTERED No.....OF 192 .  
M. O. EXAMINATION, 192 .

(This application must reach the Office of the Controller on or before  
the 192 .)

## APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself for the ensuing Examination for the Degree of Master of Obstetrics.

The Certificates, required in Section 2 (or in Section 8), Chapter XLIX of the University Regulations, are herewith submitted.

The fee of Rs. 200 is herewith forwarded.

I beg also to submit with this application three copies of my thesis or published work, embodying the results of independent research and having definite relation to Obstetrics or Gynaecology.

I have, etc.,

Signature.....

Dated the.....192 . Address.....

## CERTIFICATE.

We certify that....., since

This certificate is to be signed by two Members of the Faculty of Medicine or by two Masters of Obstetrics.

graduating as Bachelor of Medicine or since passing the L.M.S. Examination, has practised his profession with repute for the period of.....years, and that in habits and character he is a fit and proper person for the Degree of Master of Obstetrics.

Dated the .....192 . Signature (1).....

Signature (2).....

REGISTERED No.....OF 192 .

M. S. EXAMINATION, 192 .

(This application must reach the Office of the Controller  
on or before 192 .)

## APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself for the ensuing Examination for the Degree of Master of Surgery.

The Certificates, required in Section 2 (or in Section 8), Chapter XLVIII of the University Regulations, are herewith submitted.

The fee of Rs. 200 is forwarded herewith.

I also beg to submit with this application three copies of my thesis or published work, embodying the results of independent research work and having definite relation to Surgery.

I have, etc.,

*Signature*.....  
*Dated the*.....192 . *Address*.....

CERTIFICATE.

We certify that.....  
 This certificate is to be signed by two members of the Faculty of Medicine or by two Masters in Obstetrics. since graduating as Bachelor of Medicine or since passing the L.M.S. Examination, has practised his Profession with repute for the period of.....years, and that in habits and character he is a fit and proper person for the Degree of Master of Surgery.

*Signature (1)*.....  
*Dated the*.....192 . *Signature (2)*.....

REGISTERED No.....OF 192 .

INTERMEDIATE EXAMINATION IN ENGINEERING, 192 .

[Form of application to be used by all candidates.]

(*This application must reach the Office of the Controller on or before 192 .*)

APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,

I request permission to present myself at the ensuing Examination of the Intermediate Examination in Engineering

for Section A of the Intermediate Examination in Engineering

The Fee (1) of Rupees (30) Thirty is forwarded herewith for the I.E. and of Rupees (15) Fifteen is forwarded herewith for Section A of the I.E.

I am,  
 Sir,  
 Yours obediently,

CERTIFICATE.

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate that he has passed the First or Intermediate or Bachelor Examination in Arts or Science, that he has completed

(1) The fee must be paid either by Postal Money Order, or by crossed cheque on a Bank, or by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

in this College the full course of instruction in class, laboratory and workshop laid down by the University for  
the Intermediate Examination in Engineering

Section A of the Intermediate Examination in Engineering; that his conduct has been good; that he has diligently and regularly prosecuted his studies; that he has satisfactorily passed the College periodical examinations or other tests; that, judging from the work done by him, there is, in my opinion, a reasonable probability of his passing the Intermediate Examination in Engineering; that I know nothing against his moral character; and that I believe the subjoined account overleaf to be true.

For candidates at the • He passed the Examination in Section A of the I. E. only. the I. E. in

Principal,

The.....192

Bengal Engineering College, Sibpur.

*Particulars to be filled in by the Candidate.*

Name— University Registration No.  
Year of passing the Matriculation—  
School from which he passed—  
Division in which placed—  
Year of passing the Intermediate Examination in Arts or Science—  
" " the B.A. or the B.Sc. Examination—  
College from which he appeared—  
Division in which placed—  
Year of admission to the Bengal Engineering College, Sibpur—  
Previous appearance at Section A of I.E. in year—  
Do. do. I.E. in year—

Signature of Candidate.

REGISTERED No.....OF 192

B. E. EXAMINATION, 192

(This application must reach the Office of the Controller  
on or before 192 .)

APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing Examination of the Degree of Bachelor of Engineering in the Non-professional Section of the Degree of Bachelor of Engineering in the Civil Engineering.

The Fee (1) of Rupees Forty is forwarded herewith for the B.E., and of Rupees Twenty is forwarded herewith for the Non-professional Section of B.E.

I am,  
Sir,  
Yours obediently,

(1) The fee must be paid *either* by Postal Money Order, or by crossed cheque on a Bank, or by Remittance Transfer receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

## CERTIFICATE.

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate that he has passed the Intermediate Examination in Engineering of the University of Calcutta, that he has completed, at the Bengal Engineering College, Sibpur, the full course of study in class, laboratory and workshop prescribed by the University for the B. E. Degree

Non-professional Section of the B. E. Degree in the Civil Engineering Branch; that his conduct has been good; that he has diligently and regularly prosecuted his studies; that he has satisfactorily passed the College periodical examinations or other tests; that, judging from the work done by him, there is, in my opinion, a reasonable probability of his passing the B. E. Examination in the Branch specified; that I know nothing against his moral character; and that I believe the subjoined account overleaf to be true.

He passed the Examination in the Non-professional Section of the B.E. in

Principal,

The.....192 . Bengal Engineering College, Sibpur.

*Particulars to be filled in by the Candidate.*

Name— University Registration No.  
 Year of passing the Matriculation—  
 School from which he appeared—  
 Division in which placed—  
 Year of passing the Intermediate Examination in Arts or Science—  
 College from which he appeared—  
 Division in which placed—  
 Year of passing the B.A. or B.Sc.—  
 College from which he appeared—  
 Division in which placed—  
 Year of admission to the Bengal Engineering College, Sibpur—  
 Year of passing Section B of the Intermediate Examination in Engineering—  
 Previous appearance at Non-professional Section of B. E. in year—  
 Previous appearance at B.E. in year—

*Signature of Candidate.*

UNIVERSITY REGISTRATION NO.....OF 192 .

B. E. EXAMINATION (*Non-Professional Section*), 192 .

(Will come into force from 1929.)

(*This application must reach the Office of the Controller  
 on or before 192 .*)

• APPLICATION.

*To the Controller of Examinations, Calcutta University.*

Sir,  
 I request permission to present myself at the ensuing Examination in the Non-professional Section of the Degree of Bachelor of Engineering.

The Fee (1) of Rupees Twenty is forwarded herewith for the Non-professional Section of B.E.

I am,  
Sir,  
Yours obediently,

CERTIFICATE.

I certify that the above-named candidate has satisfied me by the production of the Registrar's Certificate, that he has passed the Intermediate Examination in Engineering of the University of Calcutta, that he has completed, at the Bengal Engineering College, Shibpur, the full course of study in class, laboratory and workshop prescribed by the University for the Non-professional Section of the B.E. Degree, that his conduct has been good, that he has diligently and regularly prosecuted his studies, that he has satisfactorily passed the College periodical examinations or other tests, that, judging from the work done by him, there is, in my opinion, a reasonable probability of his passing the B.E. Examination in the Non-professional section, that I know nothing against his moral character, and that I believe the subjoined account overleaf to be true.

Principal,

The.....192 .

Bengal Engineering College, Shibpur.

*Particulars to be filled in by the Candidate.*

Name— University Registration No.  
Year of passing the Matriculation —  
School from which he appeared—  
Division in which placed—  
Year of passing the Intermediate Examination in Arts or Science—  
College from which he appeared—  
Division in which placed—  
Year of passing the B.A. or B.Sc.—  
College from which he appeared—  
Division in which placed—  
Year of admission to the Bengal Engineering College, Shibpur—  
Year of passing Section B of the Intermediate Examination in Engineering—  
Previous appearance at Non-professional Section of B. E. in year—

REGISTERED No.....OF 192 .

B. E. EXAMINATION (for Professional Section), 192 .

(Will come into force from 1929.)

[Form of application to be used by all Candidates.]

(This application must reach the Office of the Controller  
on or before 192 .)

• APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

Having obtained in the year

the degree of Bachelor

(1) The fee must be paid either by Postal Money Order, or by crossed cheque on a Bank, or by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.

Civil  
Engineering in the Mechanical and Electrical Branch, I desire permission  
Mining  
under the provision of Rule 4, Chapter LII, to present myself at the ensuing  
Examination for the Degree of Bachelor of Engineering in the Branch.  
A fee (1) of Rupees 40 is forwarded herewith.

I am,  
Sir,  
Yours obediently,

## CERTIFICATE.

I certify that the above-named candidate has satisfied me by the production of his Diploma that he has passed the Bachelor of Engineering in the Branch, that since then he has completed in this College the full course of study in class, laboratory and workshop prescribed by the University in the special subjects of the Branch in which he now wishes to present himself for examination, that his conduct has been good, that he has diligently and regularly prosecuted his studies, that he has satisfactorily passed the college periodical examinations and other tests, that, judging from the work done by him, there is a reasonable probability of his passing the B.E. Examination in the special subjects, that I know nothing against his moral character and that I believe the subjoined account overleaf to be true.

The.....192 . *Principal,*  
Bengal Engineering College, Sibpur.

*Particulars to be filled in by the Candidate.*

Name—  
Year of passing the Matriculation or Entrance Examination—  
School from which he appeared—  
Age recorded on Entrance or Matriculation Certificate— ..years...months.  
Year of passing the Intermediate Examination in Arts or Science—  
College from which he appeared—  
Division in which placed—  
Year of admission to Bengal Engineering College, Sibpur—  
Year of passing Intermediate Examination in Engineering—  
Year of passing the Bachelor of Engineering Examination in ( )  
Branch.

*Signature of Applicant.*

EXAMINATION.....192..

[Form of application to be used only by Candidates under Section 11  
of Chapter XXVI of the Regulations.]

(This application must reach the Office of the Controller  
on or before 192 .)

## APPLICATION.

To the Controller of Examinations, Calcutta University.

Sir,

I request permission to present myself at the ensuing.....  
Examination in.....

The fee (1) of Rupees.....is forwarded herewith.

(1) The fee must be paid *either* by Postal Money Order, or by crossed cheque on a Bank, or by Remittance Transfer Receipt. On no account should money be sent in registered or insured covers. Cash or notes will be received only, if made over by a messenger.



### FORM OF CERTIFICATE, UNDER SECTION 2, CHAPTER XVI OF THE REGULATIONS.

Where no special form is prescribed for female candidates, the form prescribed by the Syndicate for male candidates is to be used.

### FORM OF TRANSFER CERTIFICATE PRESCRIBED BY THE SYNDICATE UNDER SECTION 22, CHAPTER XXIII OF THE REGULATIONS.

No.

Certified that  
son of \_\_\_\_\_, an inhabitant  
of \_\_\_\_\_, has been a student in the \_\_\_\_\_ year class of  
the \_\_\_\_\_ College from \_\_\_\_\_ to \_\_\_\_\_ 192 .  
His conduct has been \_\_\_\_\_  
I know nothing against his character (1)  
All sums due by him to the College have been paid, including College fees  
up to \_\_\_\_\_  
His (2) \_\_\_\_\_ scholarships of Rupees \_\_\_\_\_ per mensem  
has been drawn and paid to him in this College up to \_\_\_\_\_ 192 .  
His attendance in each course of Lectures (3) is given below :—

SUBJECT :—						
Number of Lectures—						
Delivered ...						
Attended ...						

REMARKS.—(Here entries may be made under Sections 24, 25, 26 of Chapter XXIII of the Regulations.)

COLLEGE,  
The \_\_\_\_\_ 192 . Principal.

### FORM OF NOMINATION PAPER.

(Prescribed by the Syndicate under Section 4, Chapter XII of the Regulations.)

I \_\_\_\_\_ do hereby nominate  
\_\_\_\_\_ for election by the Faculty of \_\_\_\_\_ as an  
Ordinary Fellow of the Calcutta University, subject to the approval of His  
Excellency the Chancellor.

The following is a brief statement of the special qualifications of my  
nominee :—

The \_\_\_\_\_ 192 .

Signature.  
Member of the Faculty of \_\_\_\_\_

(1) If anything is known against the character of the student, this should be suitably altered.

(2) To be filled up in the case of Government scholars only.

(3) See Section 4, Chapter XXVI of the Regulations.



## REGISTER OF GRADUATES.

*Prescribed by the Syndicate under Section 1, Chapter XIV of the Regulations.*

Registration number.	Date of Registration.	Date of annual subscrip- tion.	Name.	Initial Fee.	Annual subscription.	Year for which annual subscription is paid.	Compounding Fee.	Address.	Present occupation.	Degree or Degrees taken with dates.	College from which Degree was taken.	REMARKS.
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FORM OF ANNUAL RETURN TO BE SUBMITTED BY  
AFFILIATED COLLEGES ON OR BEFORE  
THE 1st OF AUGUST.

*(Prescribed under Section 7, Chapter XX of the Regulations.)*

1. Names of the members of the Governing Body.
2. Names and qualifications of the teaching staff, and the subjects and classes taught by each.
3. The subjects taught in each class.
4. The number of students in each class and the number of students who have taken the different optional subjects.
5. The number of students who reside—
  - (a) with parents or guardians;
  - (b) in the collegiate hostel, if any;
  - (c) in non-collegiate hostels;
  - (d) in attached messes;
  - (e) in unattached messes;
  - (f) in private lodgings.
6. Income during the preceding twelve months—
  - (a) from fees;
  - (b) from fines;
  - (c) from Govt. Grant, if any;
  - (d) from University Grant, if any;
  - (e) from Endowments, if any;
  - (f) donations and subscriptions, if any;
  - (g) miscellaneous.
7. Expenditure during the preceding twelve months—
  - (a) Salaries of the Staff.
  - (b) Buildings.
  - (c) Library.
  - (d) Laboratory.
  - (e) Miscellaneous.
8. Rate of fees charged.
9. Number of students whose fees are remitted—
  - (a) in whole;
  - (b) in part.
10. Number of students in receipt of Scholarships—
  - (a) from Government;
  - (b) from Public Funds;
  - (c) from University Funds;
  - (d) from Endowments;
  - (e) from College Funds;
  - (f) from private donors.

# APPENDIX B.

## PHYSICS.

### A.—INTERMEDIATE STANDARD.

(a) *List of apparatus for practical class of 20 students.*

The figures in brackets indicate the number of sets required in each case.

*Mechanics :—*

Vernier (3).  
Glass scales and plates (3).  
Protractor (3).  
Inclined plane (2).  
Friction apparatus (2).  
Pendulum and stand (3).  
Balance weighing to 1 cm. and weights (3).  
Hydrometer with jar and weights (3).  
Apparatus for Boyle's law (2).  
Barometer (1).

—Approximate cost, Rs. 325.

*Heat*

Apparatus for determining fixed point of thermometers (3).  
Apparatus for specific heat (3).  
Apparatus for latent heat (3).

—Approximate cost, Rs. 65.

*Light :—*

Drawing board and instruments (3).  
Plane and concave mirrors (3).  
\* Prism (3).  
Lens (3).  
Glass cube (3).  
Sighting rod (3).  
Slit (3).  
Screen (3).  
Simple photometer (3).

—Approximate cost, Rs. 110.

*Magnetism :—*

Magnet (3).  
Magnetoscope (3).  
Small compass (3).  
Steel and iron wire.

—Approximate cost, Rs. 25.

*Electrostatics :—*

Electroscope (3).  
Electrophorus (3).  
Glass rod (3).

Ebonite rod (3).  
 Rubbers.  
 Insulated sphere (3).

—Approximate cost, Rs. 45.

*Current Electricity :—*

Leclanché cell (3).  
 Daniell cell (3).  
 Compass needle and stand (3).  
 Asiatic galvanometer (2).  
 Tangent galvanometer (2).  
 Wheatstone's Bridge (2).  
 Resistance coils.

-- Approximate cost, Rs. 150.

*(b) List of apparatus for lecture purpose.*

*Miscellaneous (partly for practical class).*

Strong adjustable Table.  
 Adjustable stands.  
 Bunsen's Universal holder.  
 Ordinary wooden holders.  
 Set of wooden cubes.  
 Set of wooden cylinders.  
 Set of wooden discs.  
 Two Bunsen burners.  
 Three spirit lamps.  
 Glass flasks.  
 Glass burettes.  
 Glass funnels.  
 Glass beakers.  
 Cylindrical glass measures.  
 Glass tubing.  
 India rubber tubing.  
 Wire gauze, etc., etc.

- Approximate cost, Rs. 100.

*General ideas :—*

Apparatus for illustrating the parallelogram of forces.  
 Inclined plane.  
 Pulleys.  
 Apparatus for demonstrating the laws of levers.  
 Model of screw and nut.  
 Atwood's machine.  
 Centrifugal machine.  
 Spring balance.  
 Pendulum for Foucault's experiment.  
 Model of hydrostatic press.  
 Apparatus to show the upward pressure of liquids.  
 Communicating tubes.  
 Apparatus for demonstrating the principle of Archimedes.  
 Hydrostatic balance.  
 Hydrometers.  
 Barker's mill.  
 Hydraulic ram of glass.  
 Magdeburg hemispheres.  
 Double globe for showing expansion of air.  
 Cylinder for showing the fall of bodies in a vacuum.  
 Baroscope.

Glass receivers.  
Siphons.  
Barometer tube.  
Vacuum gauze.  
Hero's fountain.  
Model of a lifting pump.  
Model of a force pump.  
Model of a fire engine.

—Approximate cost, Rs. 500.

#### *Heat :—*

Gravesande's ball and ring.  
Pyrometer.  
Apparatus for showing expansion of liquid bodies with heat.  
Thermometers.  
Air-bulb thermometer.  
Boyle's law apparatus with air-bulb attachment.  
Hope's apparatus.  
Weight thermometer.  
Apparatus for showing the elastic force of different vapours.  
Apparatus for determining the boiling point of water.  
Daniell's hygrometer.  
Dine's hygrometer.  
Simple apparatus for showing absorption and radiation of heat (Ritchie).  
Leslie's cube.  
Ingenbousz's apparatus.  
Apparatus for showing the conductivity of liquids.  
Apparatus for showing the convection of heat.  
Leslie's differential thermometer.  
Whirling table for boiling water by friction.  
Model of steam-engine.

—Approximate cost, Rs. 250.

#### *Light*

Heliostat.  
Attachment for same with adjustable slit and diaphragm.  
Demonstration photometer.  
Convex and concave lenses, mounted and unmounted.  
Convex and concave mirrors.  
Apparatus for showing laws of reflection.  
Angular mirror on graduated base.  
Apparatus for showing refraction of rays in liquids.  
Camera obscura.  
Glass prisms.  
Disc with spectral colours.  
Carbon bisulphide prism.  
Projection screens.  
Model telescope and microscope.

—Approximate cost, Rs. 250.

#### *Magnetism :—*

Two large bar magnets.  
One large horse-shoe magnet with armature.  
Magnet needle (large size) with agate centre and brass stand  
Dip needle.  
Compass (larger size).  
Steel knitting needles.

—Approximate cost, Rs. 25

*Frictional Electricity :—*

Rods of sealing wax, sulphur, and guttapercha.  
 Catskin and fox-tail rubbers.  
 One rod, half glass and half brass.  
 Pith ball double pendulum.  
 Simple illustrative apparatus such as electric wire, electric  
     chimes, etc.  
 Gold leaf electroscope (larger size) with condenser.  
 Insulating stool.  
 Discharger.  
 Faraday's ice pails.  
 Faraday's butterfly net.  
 Leyden jar with movable coatings.  
 Two ordinary Leyden jars.  
 Wire cage.  
 Hollow brass sphere on insulating stand.  
 Proof plane.  
 Distribution apparatus.  
 Electrophorus.  
 Frictional machine  
 Voss's machine.

—Approximate cost, Rs. 250.

*Dynamic Electricity :—*

Various forms of cells.  
 Oersted's apparatus.  
 Lecture galvanometer.  
 Mirror galvanometer.  
 Bichromate of potash or other battery for lecture experiments.  
 Binding screws and clamps.  
 Morse Key.  
 Commutator.  
 Apparatus for producing heat by an electric current.  
 Water Voltameter.  
 Copper Voltameter.  
 Ampere's apparatus for showing the action of magnets on cur-  
     rents and of currents on currents.  
 Electromagnets.  
 Apparatus for illustrating induced currents.  
 Small induction coil.

—Approximate cost, Rs. 250.

*Sound :—*

Bellows with four valves.  
 Organ pipe with centre stop.  
 Organ pipe with movable piston.  
 Tuning forks with resonance box. Monochord.  
 Wave apparatus.  
 Savart's toothed wheel.  
 Siren.

—Approximate cost, Rs. 100.

## B.—B.A. OR B.Sc. STANDARD.

- (a) *List of apparatus for practical class of not more than 15 students (in addition to that for Intermediate course).*

Workshop tools.  
 Two Callipers.



*General Ideas :-*

Apparatus for the production of stationary waves.  
 Apparatus showing the interference of waves.  
 Soap film frames.  
 Capillary tubes with stand.  
 Capillary plates.  
 Cohesion plates for suspension from a balance.

---Approximate cost, Rs. 60.

*Heat :-*

Bregue's metal thermometer.  
 Joule's apparatus for showing contraction of a stretched India rubber tube by heat.  
 Senarmont's apparatus for showing conductivity of crystals.  
 Right-angled bent glass tube for showing the circulation of water.  
 Davy's safety lamp.  
 Apparatus for showing the difference in the expansibility of various liquids.  
 Gay-Lussac's apparatus for proving Dalton's law.  
 Papin's digester.  
 Apparatus to show boiling at low pressure.  
 Wollaston's cryophorus.  
 Pulse glass.  
 Arrangement for melting an ice-block by means of a loaded wire.  
 Melloni's apparatus for illustrating radiation, absorption and reflection of heat.

---Approximate cost, Rs. 400

*Light :-*

Apparatus for showing total reflexion.  
 Right-angled crown glass prism.  
 Pair of achromatic prisms on stand.  
 Prism with adjustable angle for liquids on stand.  
 Three small direct vision spectroscopes.  
 Phosphorescent substances.  
 Model of the eye.  
 Stereoscope with pictures.  
 Absorption trough.  
 Two Prismatic troughs.  
 Chart of various spectra.  
 Fluorescent liquids.  
 Cubes of uranium and fluor spar.  
 Lantern slides illustrating various optical effects.  
 Model of sextant.  
 Small telescope.  
 Fresnel's mirror.  
 Fresnel's biprism.  
 Diaphragm with various apertures for showing diffraction.  
 Norrenberg's polariscope.  
 Set of preparations for use with the same.  
 Tourmaline tongs.  
 Rhomb of Iceland spar.  
 Newton's colour rings.  
 Nicol's prism.

---Approximate cost, Rs. 550.

*Sound :-*

Burner for sensitive flames.  
 Glass bell on stand for showing nodes.



Chladni's plate.  
 Trevelyan rocker.  
 Chemical harmonicon.  
 Manometric jet.  
 Revolving mirror on stand.  
 Additional organ pipes.  
 Pipe with free reed.  
 Pipe with striking reed.  
 Set of resonators.  
 Interference tube.  
 Airy's double pendulum.  
 Chronographic tuning fork.  
 Small phonograph.  
 Telephone receiver.  
 Microphone.

—Approximate cost, Rs. 350.

*Electricity and Magnetism :—*

Condenser.  
 Additional illustrative apparatus in frictional electricity.  
 Voltaic pile.  
 Dry cells.  
 Storage cells.  
 Lecture-room ammeter.  
 Lecture-room voltmeter.  
 Simple galvanoplastic apparatus.  
 Large electro-magnet.  
 Morse telegraph.  
 Barlow's wheel.  
 Lecture apparatus for showing rotation of magnets and currents  
 under electro-magnetic forces.  
 Arago's apparatus for showing induced currents.  
 Model of a gramme ring.  
 Small dynamo with hand wheel.  
 Small model motor.  
 Induction coil giving 3 or 4 in. spark.  
 Vacuum tubes.  
 Crooke's tubes.  
 Seebeck's thermo-electrical apparatus.  
 Thermo-electric pile.

—Approximate cost, Rs. 675.

C.—M.A. OR M.Sc. STANDARD.

For this standard there must be a complete collection of apparatus for advanced practical work.

(a) *Optics*.—The equipment of the optical room shall include instruments for accurate measurement such as spectroscopes, spectrometers, polarimeters, optical bench, refractometers, reading microscopes, etc.—Probable minimum cost, Rs. 3,000.

(b) *Electricity and magnetism*.—The electrical room shall be fitted with sensitive mirror galvanometers and there shall be an adequate supply of instruments for electrical and magnetic measurement, *i.e.*, resistance boxes, galvanometers, electrometers, magnetometers, standard resistances, standard capacities, standard cells, etc., besides auxiliary apparatus such as an induction coil with 8-10 in. spark, a powerful electromagnet, electric motors, etc.—Probable minimum cost, Rs. 3,500.

An accumulator battery shall form part of the electric installation, if any.

(c) *Heat*.—Additional apparatus for accurate work in calorimetry, thermometry, conduction, radiation, expansion, etc.—Probable minimum cost, Rs. 2,000.

(d) *General Physics and Sound*.—Additional apparatus for accurate work in elasticity, vapour, density, capillarity, fluid friction, etc., and sound.—Probable minimum cost, Rs. 1,500.

(e) *Workshop equipment, including lathe*.—Probable minimum cost, Rs. 350.

## PHYSIOLOGY.

### A.—INTERMEDIATE STANDARD.

(a) *List of apparatus, etc., for practical class of 24 students.*

Microscopes, one doz.  
 Dissecting instruments and razors, etc.  
 Gas burners (Bunsen),  $1\frac{1}{2}$  doz.  
 Test tube stands,  $1\frac{1}{2}$  doz.  
 Retort stands with rings, etc., 1 doz.  
 Glass bottles, etc.  
 Thermometers, 1 doz.  
 Test tubes and glass beakers.  
 Glass flasks and measures.  
 Glass tubing and rods and funnels.  
 Porcelain crucibles, etc.  
 One balance.  
 One Microtome (ice-freezing)  
 One Hemocytometer (Zeiss).  
 One Hemoglobinometer (Gower's).

—Approximate cost, Rs. 1,650.

(b) *List of apparatus and appliances for Lecture purpose.*

One Human Skeleton.  
 Set of 50 diagrams (3 ft. by 2 ft.)  
 Ordinary apparatus and appliances for illustrating lectures on chemical Physiology.  
 One simple recording drum (with clockwork).  
 One time-marker.  
 One muscle-lever myograph.  
 Two simple stands for ditto.  
 One induction coil.  
 Two electric keys.  
 One commutator.  
 Four bichromate cells.  
 Insulated wire 1 lb. (22 B. W. G.).  
 Muscle-weights 1 set.  
 One Sphygmograph.  
 One Mareys' tambour.  
 One Mareys' cardiograph.  
 One Model of eye (dissectible).  
 One Phakoscope.  
 One Model of ear (dissectible).  
 One Spectroscope (straight vision).

—Approximate cost, Rs. 350.

## B.—B.A. OR B.Sc. STANDARD.

(a) *List of apparatus, etc., for practical class of 12 students.*

*Additional requirements :—*

One Rocking Microtome.  
 Micrometers (eye-piece and stage).  
 Three Doremus Ureometers.  
 One Chemical Balance.  
 One Embedding bath (Hearson's).  
 Three Tetanus springs (graduated).  
 One Hypodermic syringe.  
 One Mercury Pump for gas analysis.  
 Two Desiccators.  
 Three Soxhlet apparatus with Liebig condenser.  
 One Centrifugal machine.  
 One Water bath (copper).  
 One Air pump.

The following set of apparatus is required for every couple of students :—

One Recording drum.  
 One Simple muscle-lever.  
 One Crank myograph.  
 One Simple stand.  
 One Du Bois Reymond's induction coil.  
 Two Electric keys.  
 One Pohl's commutator.  
 One Simple rheocord.  
 Two Pairs of platinum electrodes.  
 One Bichromate cell.  
 One Muscle weights.  
 One Time Marker.  
 One Spectroscope (straight vision).  
 One Esbach's albuminometer.  
 One Urinometer.

—Approximate cost, Rs. 2,750.

(b) *List of apparatus, etc., for lecture purpose.*

*Additional requirements :—*

One Kronecker's perfusion canula.  
 One Rabbit holder.  
 One Adjustable simple stand.  
 One Tuning fork (on stand) making 10 D. V. per second.  
 One Tetanus spring (graduated).  
 One Metronome.  
 One Deprez chronograph.  
 Two pairs of nonpolarisable electrodes.  
 One pair of muscle forceps.  
 One Ophthalmoscope.  
 Two Electrodes (shielded) for deep nerves.  
 One Hill and Bernard's sphygmometer.  
 One Stromuhr (Ludwig's).  
 One Hurtle's membrane manometer.  
 One Ludwig's mercury manometer.  
 One Laryngoscope (with throat mirrors).  
 One Fleischl's hæmometer.  
 One Oliver's hæmocyotometer.

One Oliver's hæmoglobinometer.  
 One Moist chamber.  
 One Onkometer for kidney.  
 One Reflecting galvanometer.  
 One Shunt.  
 One Spring myograph.  
 One Spectroscope.  
 One Saccharimeter (polariscope).

—Approximate cost, Rs. 2,000.

### C.—M.A. OR M.Sc. STANDARD.

#### *Practical Laboratory.*

##### (a) *Histology* :—

	Rs.
Approximate cost of equipment for 6 students .. ..	2,400

##### (b) *Chemical Physiology* :—

Approximate cost of equipment for 6 students . . .	1,800
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##### (c) *Experimental Physiology* :—

Approximate cost of equipment for 6 students ... ..	3,000
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##### (d) *Galvanometer and Optical work* :—

Approximate cost of equipment ... ..	1,200
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### BOTANY.

#### A.—INTERMEDIATE STANDARD.

##### (a) *Collections and Wall Diagrams* :—

Collection of microscopic slides.  
 Botanical Wall pictures (complete set).  
 Botanical models.  
 Physical Wall maps, Mercator's projection.  
 Physical Geography Wall Map of India.  
 Collection of diapositives.

—Approximate cost, Rs. 750.

##### (b) *Lecture-room apparatus.*

Projection apparatus.  
 Screen.

—Approximate cost, Rs. 400.

#### *List of apparatus for class of 24 students.*

##### (c) *Practical Class* :—

Microscopes, 1 doz.  
 Dissecting instruments.  
 Cork-borers.  
 Crucible tongs, 4 in number.

Hempel's desiccator, 2 in number.  
 Two doz. drop-bottles.  
 Canada Balsam bottle, 1 doz.  
 Glass tubing.  
 Glass Rod.  
 Standard measures of different capacities.  
 Graduated measures.  
 2 Rules, 1 meter long.  
 Mortars and pestles.  
 Pipettes.  
 Air-pump plate.  
 Pressure tubing.  
 Flasks of different capacities.  
 Funnels of different sizes.  
 Burners.  
 Rubber tubing.  
 Test tube.  
 Test-tube stands, holders, cleaners.  
 Thermometers.  
 Woulff's bottles.  
 Burettes.  
 Burette stands.  
 Three double belljars.  
 Stoppered belljars.  
 Beakers in nests.  
 Aspirators, 5 litres cap., three in number.  
 Corks.  
 Maps, 1 doz.  
 Draining rack.  
 Pieces of cork sheet, weighted.  
 Glass capsules.  
 Camel hair brushes.  
 Belljars for microscopes.  
 One Balance and weights.  
 Staining troughs.  
 Glass bones.  
 Filter paper.  
 Arc-indicator.  
 Stains and chemicals.  
 Flower-pot (Rs. 20)

—Approximate cost, Rs. 2 400.

#### B.--B.A. OR B.SC. STANDARD.

(a) *List of apparatus, etc., for practical class of 12 students.*

*Additional requirements :—*

One Rocking microtome.  
 One Embedding bath.  
 One Water bath (copper).  
 One Incubator.  
 Two Spectroscopes (direct vision).  
 Six Belljars with double walls.  
 One doz. Potash bulbs.  
 Half doz. Poroscope (Christians's).  
 One Centrifugal machine.  
 Half doz. Bichromate cells.  
 Two doz. Porcelain trays.  
 Half doz. Thermometers.

Half doz. Pfeffer's apparatus (to show movement of gases in plants).

—Approximate cost, Rs. 600.

(b) *Apparatus and appliances for lecture purpose.*

*Additional requirements :—*

Models and museum specimens.

One Nitrometer.

One Induction coil.

One Moll's apparatus (for experimenting on assimilation).

One Auxanometer.

One Clinostat.

One Potometer.

—Approximate cost, Rs. 750.

C.—M.A. OR M.SC. STANDARD.

*Practical Laboratory.*

(a) *Histological work :*

	Rs.
Approximate cost of equipment of 6 students ... ..	2,400

(b) *Experimental Plant Physiology : -*

Approximate cost of equipment of 6 students . .	3,000
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(c) *Bacteriological work : -*

Approximate cost of equipment of 6 students ... ..	600
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## ZOOLOGY.

A.—INTERMEDIATE STANDARD.

(a) *List of apparatus for practical class of 20 students :*

Five Microscopes.

Dissecting instruments.

Twenty Troughs, fitted with cork, for dissecting small animals under water.

Twenty Dissecting trays.

—Approximate cost, Rs 750.

(b) *List of apparatus for lecture purpose :—*

Set of one hundred diagrams.

Skeleton of vertebrates (types).

Museum specimens of invertebrates.

—Approximate cost, Rs. 1,300.

## B.—B.A. OR B.Sc. STANDARD.

(a) *List of apparatus for practical class :—*

Microscopes, 1 doz.  
 Slides, etc.  
 Dissecting troughs.  
 Dissecting trays.  
 Dissecting instruments.  
 One Rocking microtome.  
 One Embedding bath.  
 One Hearson's incubator.

---Approximate cost, Rs. 1,700.

(b) *List of appliances for lecture purpose :—**Additional :—*

One hundred diagrams.  
 Skeletons and dissected specimens and models of vertebrates.  
 Museum specimens of invertebrates.  
 Microscopical specimens.

—Approximate cost, Rs. 3,000.

## C.—M.A. OR M.Sc. STANDARD.

*Practical Laboratory.*(a) *Embryological and Histological work :—*

	Rs.
Approximate cost of equipment for 6 students ...	3,000

(b) *Dissecting work :—*

Approximate cost of equipment for 6 students ...	600
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## GEOLOGY.

## A.—INTERMEDIATE STANDARD.

(a) *Maps :—*

Geological Wall Maps of India.  
 Physical Wall Maps of Asia and Europe.  
 Physical Wall Maps of the World.

—Approximate cost, Rs. 150.

(b) *Collections :—*

Collection of Minerals—Foote Mineral Company, Philadelphia, High School Collection of specimens No. 13A. (or similar collection).

Collection of 102 glass crystal models according to Professor Baumhoner, Dr. Krantz, Bonn (or similar collection).

Collection of 100 Rock specimens, according to Prof. Credner, 85 by 11 cm. with paste-board boxes in wooden case. Dr. Krantz, Bonn (or similar collection).

Collection of corresponding Rock Sections.—Dr. Krantz, Bonn (or similar collection).

Collection of minerals illustrating physical properties, 100 minerals, 5 by 6 cm. in paste-board boxes in wooden case, Dr. Krantz, Bonn collection No. 70 (or similar collection).

Collection of Geotectonic models, of wood, according to Prof. Kalkowsky, Dr. Krantz, Bonn (or similar collection).

Collection of type fossils, 100 species.

Collection of Diapositive to illustrate general Geology, according to Prof. Van Calker, Dr. Krantz, Bonn (or similar collection).

—Approximate cost, Rs. 1,800.

(c) *Lecture-room Apparatus :-*

Projection lantern.

Demonstration Microscope.

—Approximate cost, Rs. 550.

(d) *Practical Class Apparatus :-*

Chemical balance with set of weights.

6 Students' balances, with weights.

Jolly's spring balance.

6 Pyknometers.

Blowpipe set with reagents.

2 Zeiss' achromatic pocket lenses.

3 Scales of hardness.

Contact Goniometer.

Clinometer, Klockmann's model, manufactured by Fuess.

6 boxes of drawing instruments.

Swift's petrological microscope.

—Approximate cost, Rs. 1,200.

B. —B.A OR B.Sc STANDARD.

(a) *Collections :-*

The collection specified for the Intermediate Course should be amplified and supplemented by the following :—

Blowpipe collection of 100 minerals.

Collection of section of minerals for the study of their special properties.

Collection of wooden crystal models.

Collection of diapositives illustrative of dynamic and structural geology.

Collection of specimens illustrative of dynamical, petrogenetic, and architectonic geology.

—Approximate cost, Rs. 2,500.

(b) *Lecture Room Apparatus :-*



Apparatus for use with the projection lantern for demonstration of interference phenomena, polarisation, double refraction, etc., with accessories.

Optical models illustrative of double refraction in crystals.

—Approximate cost, Rs. 800.



(c) *Practical Class Apparatus* (in addition to that for the Intermediate Course) :—

Four students' balances in cases (100 grammes size).  
 Four sets of gilt weights, fractional gramme weights of aluminium.  
 Open beam balance carrying 1000 gr.  
 Set of weights, up to 1000 gramme, nickelled.  
 Specific gravity bottles, 54 grammes with perforated stoppers.  
 Becker's specific gravity balance for liquids and solids.  
 Scales of hardness.  
 Zeiss' achromatic pocket lenses, metal mounting,  $\times 6$  and  $\times 10$  (3 of each).  
 One additional contact goniometer.  
 One additional Swift's petrological microscope.  
 Reflexion goniometer.  
 Polarizing microscope.  
 Dichroscope.  
 Chemicals.  
 Chemical apparatus, for chemical mineralogy and geology.  
 Geological hammers, chisels, small rock-grinding apparatus.  
 Six Blowpipe sets with reagents.

—Approximate cost, Rs. 2,000.

C.—M.A. or M.Sc. STANDARD.

No additional apparatus will be necessary for the standard.

EXPERIMENTAL PSYCHOLOGY.

A.—B.Sc. STANDARD.

*Models and charts for anatomical and physiological demonstration :—*

Plastic Model showing the cerebral masses on one hemisphere, and the nerve fibres on the other.  
 Plastic model of cerebellum and spinal cord.  
 Set of wax models (or collection of charts) showing the development of the foetal brain.  
 Charts showing brain-sections and stereoscopic views of the central nervous system.  
 Charts showing development of brain from gymnotus to mammal.  
 Plastic model of the eye, showing muscles, nerves, vessels, etc.  
 Plastic model of the ear, showing the internal, middle and external ear.  
 Charts showing the anatomy of nerves and sense-organs.  
 Artificial eye.  
 Phacoscope for demonstrating accommodation of lens.  
 Ophthalmoscope demonstrating movements of the eye.

*Apparatus for experimental study of sensations :—*

Olfactometer, with accessories.  
 Harmonical.  
 Tonometer.  
 Tuning forks. Resonators.  
 Quincke's tubes.  
 Organ pipes.  
 Sonometer.

*Apparatus for testing the appreciation of difference in musical pitch :—*

Piston whistle.  
 Savart's toothed wheel.  
 Colour Mixer with rotating discs.  
 Champimeter. Colour discs.  
 Stereoscope with slides.  
 Pseudoscope.  
 Set of charts with optical illusions.  
 Instrument for studying the muscle sensations and tactile space.  
 Apparatus with electric contacts for studying 'the time sense'  
 Sound hammer for experiments on time sense

*Time Measurement of Mental Phenomena.*

Kymograph with accessories.  
 Tambour with writing point.  
 Time marker.  
 Writing tuning forks.  
 Vernier chronoscope (with accessories).  
 Stop watch giving fifths of a second.  
 Reaction time pendulum.  
 Flash light instrument with electric contact.  
 Touch reaction instrument.  
 Electric key.  
 Chain-reaction instrument.  
 Discs for chain-reaction instrument.

*Apparatus for studying Association, Attention, Discrimination, Memory, Will, etc.*

Material for studies in association (photographs, etc.).  
 Instrument for studies in association and memory.  
 Instantaneous shutter for association experiments.  
 Puzzle pictures.  
 Masson's disc.  
 Tachistoscope.  
 Psychodometer.  
 Ergograph.  
 Automatograph.

*Technical outfit :—**(a) Optical and measuring instruments :—*

Photometer.  
 Microscope.  
 Photographic camera.  
 Reading glasses.  
 Cardboard and gelatin paper of various colours.  
 Thermometer (finely graded).  
 Aerometer, measuring tubes for liquids, pipettes &c.  
 Mathematical Drawing Instruments.  
 Apothecary scale with weights.

*b) Electric apparatus.*

Leclanche cells.  
 Grove cells.  
 Induction coil.

Electro-magnet.  
 Galvanometer with mirror.  
 Electrodes, electrical connection and wires.

(c) *Miscellaneous* :—

Surgical outfit (scissors, forceps, etc.)  
 Set of carpenter's tools.  
 Glass apparatus (tubes, rods, jars, funnels, etc.)  
 Metal stands and rods.  
 Rubber tubes, rubber bands, rubber atomisers, etc.  
 Brass and copper sheets, nails, screws, hooks, etc.  
 Drawing materials, paper, coloured papers, etc.  
 Smell and taste solutions.

B.- M.A. OR M.Sc. STANDARD.

In addition to the apparatus required for the B.Sc. standard, the following :—

*Models and charts for anatomical and physiological demonstrations* :—

Plastic model showing the course of the nerve-fibres throughout the encephalic mass.  
 Model showing the convolutions, the meridian section and the horizontal section.  
 Model of various heads showing the brain.  
 Model showing mechanism of the ear.

*Apparatus for experimental study of sensation* :—

Differential Sonometer.  
 Siren.  
 Electric bells.  
 Electric phonometer.  
 Instruments for successive contrast and irradiation.  
 Apparatus for diagnosing colour blindness.  
 Apparatus for appreciation of colour.  
 \*Micrometer Shutter for studying minute fields of colour.

*Perception, and estimation of spatial and temporal magnitudes* :—

Instrument for estimating angular divisions.  
 Mirror pseudoscopes.  
 Set of instruments for studying space in co-ordinated movements of both arms.

*Time Measurement of Mental Phenomena* :—

Chronoscope measuring the hundredth part of a second.  
 Machine for measuring reaction-time by a falling rod.  
 Drop window for the sudden exposure of colours, numbers, etc.  
 Telegraph keys with sounder.  
 Reaction key with buttons.

*Association, Attention, Discrimination, Memory, Emotion, Will, etc.* :—

Instrument for studying the complication of perceptions.

instrument for studying the movements during the emotions (by  
Elbs Freiburg).  
Myograph, Sphygmograph, Pneumograph.

## GEOGRAPHY.

## INTERMEDIATE STANDARD.

1. *Teaching and Demonstration.*

## A. General :—

Terrestrial Globe. Wall-maps (continents and principal political divisions). Magic Lantern with slides. Large atlas.  
Stereoscope with slides illustrative of Descriptive Geography (principal countries of the world, with interesting scenes and monuments).

## B. Special :

(a) Mathematical (or Astronomical) Geography :—

An orrery. Diagrams and magic lantern slides illustrative of the solar system and its configuration, changes of the seasons, varying lengths of day and night, solar and lunar eclipses, phases of the moon tides.

Diagrams showing relative local time for principal cities.

Tables of latitude and longitude.

Stellar chart for identifying the pole star and chief circumpolar constellations.

(b) Orographical and Hydrographical wall maps for studying distribution of land and water :—

Maps showing contour of the land, and principal mountain systems, lines of drainage, water basins, river systems and deltas.

Relief map of India.

Ocean charts showing ocean depths and contour of the ocean floor, ocean currents with surface temperature; coral and other reefs, ocean-deposits.

Maps of Arctic and Antarctic Regions.

(c) Stratigraphical Charts and Diagrams :—

Diagrams explaining varieties of stratification section of a coal-field in Bengal.

Geological Survey map of India.

(d) Botanical and Zoological charts :—

Charts showing the distribution (1) of plants : (2) of Animals.

(e) Ethnographical and demographical wall maps showing the distribution of Man and his industries :—

Anthropological charts showing the distribution of the Races of man. Stereoscopic and lantern slides showing chief racial types. Maps showing distribution of (1) mineral products, (2) vegetable products including food-stuffs (India).

Maps showing railway Lines (India).

Maps showing ports and harbours—ocean highways.

(f) Statistical charts and diagrams more especially with regard to India.

## II.—A small Collection of the Chief Minerals and

### Economic Products of India.

#### III.—Practical Course.

A.—Cartography, drawing plans and maps, projections. Orientation and determination of latitude, and modelling in sand and clay.

Two sets of the following appliances for a class of 20 students :—

Drawing materials and instruments with special reference to Cartography.

Measuring Tape and Chain.

Mariner's Compass.

Magnetic Needle.

Spirit-level and Plumb line.

Chinometer.

Clay-modelling tool—palette knife.

Magnifying Lens.

B.—Meteorological observations.

One set of the following instruments for a class of 20 students :—

Two ordinary thermometers.

Maximum and Minimum thermometers.

Thermometer screen.

Barometer (with vernier and thermometer).

Dry and wet bulb thermometer.

Hygrometric Tables.

Rain gauge.

Wind-direction. Compass-card and wind vane.

C.—Meteorological charts (with Meteorological tables, where necessary) for studies in atmospheric distribution.

(a) Curves showing annual and diurnal ranges of temperature, and of pressure (for typical localities, including Calcutta and London).

(b) Isothermal lines showing the mean temperature of the globe (1) for the year, (2) in January and (3) in July.

(c) Lines showing the mean barometrical pressure and the prevailing winds of the globe, (1) for January, (2) for July.

(d) Lines showing periodical winds (including the monsoon).

(e) Simple diagrams showing the direction of gyratory movements of the wind in the Northern and the Southern Hemispheres.

(f) Weather charts, isobars, gradients, areas of depression and their shiftings. Tracks of cyclones north and south of the Lines.

(g) Rainfall chart for the globe.

Rainfall chart for India.

Chart showing monthly rainfall for Calcutta and London.

(h) Daily weather chart for Calcutta.

#### CHEMISTRY.

##### A.—INTERMEDIATE STANDARD.

Practical list of apparatus for 20 students, working in pairs.

	Quantity.
Aspirator, 10 litre capacity ...	2
Balance, with agate knife edges and planes, graduated beam, beam support, thick glass vessel, double book and polished mahogany stool for specific gravity experiments, to carry 250 gms. sensitive to 1 mg. ...	4

	Quantity.
Analytical weights, .001 to 100 gms. ...	4 sets.
Dispensing scales with weights ...	1
Basin, evaporating, Royal Berlin ...	1 doz.
Porcelain with spout, capacity 80 cc.	
Ditto ditto 100 cc. ...	2 doz.
Ditto ditto 300 cc. ...	1 doz.
Sand bath deep spun, etc., diam. 10 cm. ...	1 doz.
Steam bath (to be made locally)	
Beakers, Bohemian glass without lip, capacity 90 cc. ...	1 doz.
Ditto ditto ditto 140 cc. ...	2 doz.
Beaker, Jena glass, No. 2, capacity 150 cc. ...	1 doz.
Ditto ditto 6, capacity 500 cc. ...	1 doz.
Foot blower, size No. 3 ...	2
Extra rubber disc for No. 3 ...	4
Extra nets ...	2
Blowpipe, kerosine (Dr. Richardson's) ...	1
Blowpipe, Universal, with ball socket movement ...	2
Mouth Blowpipe, nickel-plated ...	1 doz.

## Bottles, best Bohemian glass—

N. M., without stopper, 150 cc. ...	6 doz.
N. M., flat stoppered, for reagents with carefully ground stoppers, capacity 60 cc. ...	6 doz.
N. M., flat stoppered, for reagents with carefully ground stoppers, capacity 150 cc. ...	1 gross
N. M., flat stoppered, for reagents with carefully ground stoppers, capacity 250 cc. ...	2 gross
Bottles, W. M., flat stoppered, capacity 60 cc. ...	6 doz.
Ditto ditto ditto 225 cc. ...	6 doz.
Woulf's bottles with two necks, one in centre and one on shoulder, capacity 250 cc. ...	2 doz.
Burettes with stopcocks (c. form) lateral, normal calibrated 50 cc. × 1/10 ...	1 doz.
Bunsen burner with air regulator, diam. 1 cm. ...	2 doz.
Star support for the above ...	1 doz.
Chimney, conical for the above ...	1 doz.
Blowpipe jet for the above ...	1 doz.
Bench light burners for bending glass tubes ...	6
Fletcher's safety, Bunsen, No. 10 ...	3
Cylindrical cans for boiling water, condensers, Liebig's inner tube fitted with I. R. cork, 40 cm. ...	½ doz.
Connectors, double (for batteries) ...	2 doz.
Corks, finest quality, 23-25 mm. long, 2 mm. taper, diam. of top 16 mm. ...	6 doz.
Corks, finest quality, 23-25 mm. lon. 2 mm. taper, diam. of top 20 mm. ...	1 gross.
Corks, finest quality, 32 mm. long, head measure 30 mm. ...	1 gross.
Ditto ditto ditto 40 mm. ...	4 doz.
Ditto ditto ditto 50 mm. ...	2 doz.

## Corks, India Rubber, best quality, red—

Size 1, diam of bottom 13 mm. top 16 mm. ...	2 doz.
Size 3-A ditto 25 ditto 29 mm. ...	2 doz.
Size 5 ditto 29 ditto 35 mm. ...	2 doz.
Cork borers, of brass tube with rod nickel-plated, in sets of 3	1 doz. sets

## Quantity.

Cork borers, of brass tube with rod, nickel-plated, in sets of 12	2 sets.
Corkpressers, cast iron, heavy 25 cm. long	2
Covers for beakers, concave (clock glass), diam. 7½ cm.	2 doz.
Crucibles, Berlin porcelain, with cover, No. O, 14 cc.	2 doz.
Crystallizing dishes, flat bottom, with spout, 5 cm. deep, 10 cm. diam.	2 doz.
Desiccators, Scheibler's with ground glass cover, 15 cm. diam. of top	4
Desiccator discs, perforated circles of Berlin Porcelain to fit above 11 cm.	4
Files, round, 13 cm. long, without handles	1 doz.
Files, triangular, 13 cm. long, without handles	1 doz.
Filter discs, perforated, Berlin Porcelain for use in funnels, true circular, 64 mm. diam.	4
Filter papers, Schleicher and Schull, cut circular, No. 595 for qualitative work, diam. 9 cm.	1,000
Filter papers, Schleicher and Schull, cut circular, No. 595 for qualitative work, diam. 11 cm.	1,000
Flasks, Bohemian, flat bottom, capacity 200 cc.	1 doz.
Ditto ditto ditto 500 cc.	2 doz.
Ditto round bottom ditto 200 cc.	1 doz.
Ditto ditto Jena glass, short neck, 500 cc.	1 doz.
Flasks with side tube from neck, straight, 200 cc.	1 doz.
Flasks, Jena glass, conical, Erlenmeyer's, capacity 200 cc.	1 doz.
Measuring flasks, standard, gauged at one mark, stoppered neck, 250 cc.	1 doz.
Measuring flasks, standard, gauged at one mark, stoppered neck, 1,000 cc.	1 doz.
Funnels, Bohemian glass, with ground edges, sides inclined at 60 degrees plain, diam. 6 cm.	1 doz.
Funnels, Bohemian glass, with ground edges, sides inclined at 60 degrees plain, diam. 8 cm.	1 doz.
Funnels, Bohemian glass, with ground edges, sides inclined at 60 degrees plain, diam. 19 cm.	4 doz.
Funnels, Bohemian glass, with ground edges, sides inclined at 60 degrees ribbed 8 cm.	6
Safety funnels with long tube for fitting up glass flasks, etc., thistle head, 32 cm. long	1 doz.
Safety funnels, with long tube, etc., with bend and one bulb thistle, 30 cm.	½ doz.
Gas jars, cylindrical with ground flange, Bohemian glass, 21 × 4 cm.	1 doz.
Gas jars, cylindrical with ground flange, Bohemian glass, 32 × 5 cm.	1 doz.
Ground glass discs, diam. 5 cm.	1 doz.
Ditto ditto 6 cm.	1 doz.
Graduated gas jar with spout on glass foot, scale descending capacity 100 cc.	4
Graduated gas jar with spout on glass foot, scale descending capacity 500 cc.	4
Kipp's apparatus, bulb 100 cm. diam.	3
Magnets	12
Mortars and Pestle	12
Ditto iron	1
Pinch Cocks	19
Pipettes, 5 cc.	12
„ 10 cc.	12
„ 25 cc.	12
Platinum foil, .01 mm. thick	5 gms.

## Quantity.

Platinum wire, 25 mm. ... ..	5 gms.
Pliers, steel ... ..	2
Apparatus for showing diffusion ... ..	1 set.
Retorts, 70 cc. ... ..	1 doz.
„ 150 cc. ... ..	1 doz.
Retort stand ... ..	12
Clamps for flasks ... ..	12
Glass rods ... ..	$\frac{1}{2}$ kgm.
Boxwood rulers ... ..	2
Deflagrating spoons ... ..	6
Iron spoon for burning phosphorous ... ..	6
Test tube, thin glass ... ..	4 gross.
Boiling tubes ... ..	4 doz.
Test tube brushes ... ..	12
Test tube stands ... ..	12
Thermometers up to 200° C. ... ..	6
ditto 360° C. ... ..	6
Crucible tongs ... ..	1 doz.
Graduated glass tubes ... ..	4
Pneumatic troughs ... ..	1 doz.
Glass tubing ... ..	2 kgm.
Combustion quills ... ..	1 kgm.
Jena glass combustion tubes ... ..	2 kgm.
I. R. tubing, best, int. diam. 4 mm. ... ..	12 yds.
„ „ „ 10 mm. ... ..	24 yds.
Watch-glass ... ..	2 doz.

*To be purchased locally.*

Wire gauge, iron, 40 holes to an inch ... ..	
„ copper, 40 holes to an inch ... ..	
Wire, iron ... ..	
Wire copper ... ..	
Tripods ... ..	1 doz.
CaCl <sub>2</sub> tubes ... ..	1 doz.

—Approximate cost, Rs. 900.

Reagents for practical class of 20 students.

—Approximate minimum cost, Rs. 150 (one year's supply).

*List of Chemical apparatus for Lecture work, Intermediate Examination*

	Approximate quantity required.
Evaporating Basin of aluminium, fig. 3, strong, polished, pure 10 cm. diam. with spout ... ..	1
„ Ditto of "R" Resistance glass with spout, 70 mm. diam. ... ..	6
„ Ditto Royal Berlin Porcelain with spout, glazed inside and out—	
No. 00 capacity 50 cc. ... ..	6
„ 1 „ 100 cc. ... ..	6
„ 2 „ 140 cc. ... ..	6
„ 4 „ 200 cc. ... ..	6
„ Ditto glazed inside and partially outside—	
No. 5 capacity 300 cc. ... ..	3
„ 6a „ 535 cc. ... ..	3
„ 7 „ 765 cc. ... ..	2



Approximate  
quantity  
required.

Beakers, Bohemian glass without spout—

No. 0 capacity	50 ccm.	...	...	...	6
" 1 "	90 ccm.	...	...	...	6
" 2 "	140 ccm.	...	...	...	6
" 3 "	200 ccm.	...	...	...	6
" 4 "	325 ccm.	...	...	...	6
" 9, 2 litres capacity		...	...	...	2

Beakers of Resistance " R " glass wide shape, with spout—

No. 1 capacity	150 cc.	...	...	...	6
" 2 "	200 cc.	...	...	...	6
" 3 "	300 cc.	...	...	...	6
" 4 "	500 cc.	...	...	...	6
" 5 "	750 cc.	...	...	...	6
" 6 "	1,000 cc.	...	...	...	3

Covers for Beakers, gas jars, etc., ground one side glass circle—

Diam. 5 cm.	...	...	...	3 doz.
" 7½ cm.	...	...	...	3 doz.
" 10 cm.	...	...	...	3 doz.

Ditto with hole in centre—

Diam. 7½ cm.	...	...	...	1 doz.
" 10 cm.	...	...	...	6

Ditto concave (clock glasses)—

Diam. 6½ cm.	...	...	...	2 doz.
" 9 cm.	...	...	...	1 doz.

Tripods, with circular top and iron legs—

Height 15 cm.	...	...	...	6
" 18 cm.	...	...	...	6
Sand bath dishes, shallow, stout, sheet iron, flat bottom, 10 cm. diam.	...	...	...	3
Asbestos mill board, thickness of sheet 1/16 in., weight per sheet 40 × 40 in. 4 lbs.	...	...	...	4 lbs.
Asbestos yarn, ¼ in. diam	...	...	...	1 lb.
Bench light, Batswing burner, height 30 cm.	...	...	...	2
Flat flame, Bunsen burners for bending glass and heating tubes, length of opening at the mouth 15 cm.	...	...	...	1
Bunsen gas burner with air regulation	...	...	...	6
Rosetop for ditto ditto	...	...	...	3
Star support for chimneys	...	...	...	4
Iron chimneys, conical	...	...	...	4
Blowpipe jets	...	...	...	4
Teclu gas burner, large size	...	...	...	2
Head Fig. A to fit ditto	...	...	...	2
" Fig. B to fit ditto	...	...	...	2
" Fig. C to fit ditto	...	...	...	2
Chimney with clamping screw	...	...	...	2
Fletcher's safety, Bunsen, No. 5	...	...	...	2
Spirit lamps with extra neck, capacity 120 cc.	...	...	...	6

					Approximate quantity required.
Flasks, Bohemian, flat bottom—					
Capacity	75 cm.	...	...	...	1 doz.
"	175 cm.	...	...	...	1 doz.
"	259 cm.	...	...	...	1 doz.
"	400 cm.	...	...	...	1 doz.
"	500 cm.	...	...	...	1 doz.
"	750 cm.	...	...	...	1 doz.
"	3 litres	...	...	...	4
Flasks, 500 cc.	...	...	...	...	6
Flasks of " R " Resistance glass—					
Shape D. capacity	75 cc.	...	...	...	1 doz.
	250 cc.	...	...	...	1 doz.
"	500 cc.	...	...	...	1 doz.
"	750 cc.	...	...	...	6
"	1,000 cc.	...	...	...	4
"	1,500 cc.	...	...	...	3
Shape D. of extra hard glass for preparing Oxygen round bottom—					
Capacity	150 cc.	...	...	...	1 doz.
"	250 cc.	...	...	...	6
Capacity of " R " Resistance glass, Erlenmeyer's	capacity 200 cc.	...	...	...	6
Bolt head flask, 3000 cc. capacity	...	...	...	...	2
Retorts stoppered, etc.—					
Capacity	150 cc.	...	...	...	1 doz.
"	250 cc.	...	...	...	1 doz.
Receivers, with three necks, capacity 3 litres	...	...	...	...	2
Retorts, without tubulure and stopper, capacity 250 cc.	...	...	...	...	6
Ditto ditto capacity 500 cc.	...	...	...	...	6
Retorts with tubulure for cork—					
Capacity	250 cc.	...	...	...	6
"	500 cc.	...	...	...	3
Gas-developing apparatus, 40 cm. long	...	...	...	...	2
Gas-holder, 25 litres capacity	...	...	...	...	1
Retort stands, 24 in. long	...	...	...	...	6
Clamp, of malleable iron	...	...	...	...	6
Liebig's condenser, glass jacket and tube and length of body	60 cm.	...	...	...	6
Liebig's condenser, glass jacket and tube and length of body	80 cm.	...	...	...	2
Condensation tube, U tube 30 cm. long	...	...	...	...	2
Condenser stand	...	...	...	...	2
Funnels, glass sides, inclined at 60 plain—					
Diam	5 cm.	...	...	...	1 doz.
"	7½ cm.	...	...	...	1 doz.
"	10 cm.	...	...	...	1 doz.
"	15 cm.	...	...	...	8
Ditto ribbed, 10 cm.	...	...	...	...	6
Condenser with one tubulure and worm, length of jacket 25 cm. diam. 7½	...	...	...	...	9

	Approximate quantity required.
Funnels, separatory, and—	
Capacity 60	6
Capacity 100	6
Glass tubing for bending, Nos. 2, 3 and 5	4 K
Ditto No. 11	5 K
Combustion tubing, best Bohemian, 5 to 10 mm. diam.	
Nos. 2 to 6 assorted	2 lb.
Jena combustion tube, 12 to 25 mm. outside diam., assorted	4 lb.
Glass cutting tools, set of 12, semi-circular	1 set.
Set of glass blower's tools	1 set.
Files, round, 10 cm. long, without handles	6
Files, triangular, 10 cm.	2
Rasps, half round, 15 cm. long	2
Flat files 15 cm.	2
Corks, 23-25 mm. long, 2 mm. taper, diam. of top 29 mm.	6 doz.
„ 23-25 mm. „ 2 mm. ditto 29 mm.	6 doz.
„ 32 mm. „ 2 mm. head measure 30 mm.	3 doz.
„ 32 mm. „ 2 mm. 40 mm.	3 doz.
„ 32 mm. „ 2 mm. 50 mm.	3 doz.
„ India rubber, red size I, diam. of bottom 13 mm., top 16 mm.	2 doz.
„ 3a ditto 26 ditto 29	2 doz.
„ 4 ditto 29 ditto 33	2 doz.
Cork borers in sets of 12	1 set.
Cork presser, wheel pattern	1
Cork borer sharpener for No. 983	1
Tubing, best India rubber, red, int. diam. 4 mm.	12 yds.
Ditto ditto ditto 10 cm.	12 yds.
Universal blowpipe	1
Footblower, size No. 3	1
Mouth blowpipe, nickel-plated	2
Platinum foil, 0.3 mm. thick, 100 sq., 1 cm. weighing 5 gms.	10 gms.
Platinum wire, 25 mm., diam. 1 metre, weighing 1.2 gms.	6 gms.
Steel hammers, 15 mm. square face	2
Anvils	2
Horseshoe magnets, 20 cm. long	1
Mortars and pestles, diam. 8 cm.	3
Ditto ditto 15 cm.	2
Ditto, iron bowlshape, diam. 5 in.	1
Forceps	2
Crucibles, Royal Berlin porcelain, with cover—	
No. 1, 25 cc.	3
No. 3, 80 cc.	3
Tongs, 15 cm. long	3
„ for picking up mercury	1
„ 61 cm. long	1
Spatulas, 15 cm. long	4
„ 20 cm. „	2
Pliers, steel and 6 in. long	2
Scissors, 6 in. long	1 pair.
Watchmaker's vice	1

	Approximate quantity required.
Watch glass clips, diam. 10 mm. ...	2
Bottles, 125 cc. M. N. with stoppers ...	3 doz.
„ 250 cc. ...	3 doz.
„ 300 cc. ...	2 doz.
„ 750 cc. ...	1 doz.
Bottle's cap, 2 oz. N. M. with stoppers ...	3 doz.
Ditto 6 oz. ...	3 doz.
Ditto 12 oz. ...	2 doz.
Ditto 20 oz. ...	1 doz.
Bottles, W. M. flat stoppered cap. 4 oz. ...	2 doz.
Ditto ditto ditto 8 oz. ...	2 doz.
Ditto ditto ditto 10 oz. ...	1 doz.
Specimen bottles, diam. 6 cm., int. diam. 4 cm. ...	2 doz.
Jars, cylindrical, etc., 15 cm. high ...	1 doz.
Ditto 4, etc., 20 cm. ...	1 doz.
Ditto 5, etc., 30 cm. ...	1 doz.
Ditto 6½, etc., 40 cm. ...	6
Jars, graduated, cap, 200 cc. ...	2
Gas jars, 500 cc. cap. ...	2
Bell jars, cap 2 litres ...	3
Deflagrating jars, 10 cm. diam. ...	2
Ditto globes, diam. 30 cm. ...	2
Detonating bottle ...	2
Balloons, collodion, cap. 800 cc. ...	1 doz.
Ditto ditto 1,500 cc. ...	6
Deflagrating spoons with brass cap ...	6
Iron spoons for burning P or S ...	4
Deflagrating stands ...	2
Pneumatic trough, length 36 cm. ...	1
„ circular 16 cm. deep ...	1
Beehive shelves, diam. 10 cm. ...	1
Pneumatic trough, porcelain, 18 cm. long ...	1
„ trough, 50 cm. long ...	1
Funnels, long neck, 30 cm. long ...	1 doz.
Ditto ditto 46 ditto ...	6
Funnels, safety, medium ...	6
Kipp's apparatus, 1 litre cap ...	4
Chloride of calcium tube, 20 cm. long ...	6
U-shaped, length of limb 16 mm. diam. of limb 15 cm. ...	6
U-shaped, 15 cm. long ...	6
„ 20 mm. diam. ...	3
„ 15 cm. long ...	3
Chloride of calcium jars, height 35 cm. ...	6
Absorption tubes, Babo's ...	2
Gas washing bottle, cap. 150 cc. ...	6
Eudiometer, 40 cm. long ...	2
Bunsen's gas voltameter ...	1
Gas tubes sealed at one end, cap. 50 ccm. in 1/10 ...	2
„ glass stop cock at top 50 ccm. 1/5 ...	2
Schroedters' apparatus ...	1
Aspirators, 4 litres cap. ...	2
Set of four burners, etc. ...	1
Ramsay's tube heater with burner ...	1
Erlenmeyer's combustion furnace (15 burners) ...	1

Approximate  
quantity  
required.

Standard delivery pipettes—

1 cc.	...	...	...	...	2
2 cc.	...	...	...	...	2
5 cc.	...	...	...	...	2
10 cc.	...	...	...	...	2
25 cc.	...	...	...	...	2
50 cc.	...	...	...	...	2
Standard flasks with one mark, 250 cc. with stopper	...	...	...	...	2
500 cc.	...	...	...	...	2
With spout, 200 cc.	...	...	...	...	1
Normal burettes with stop cock, 50 by 1/10 cc.	...	...	...	...	2
„ for pinch cock, 50 by 1/10 cc.	...	...	...	...	2
Burette floats	...	...	...	...	4
Burette stands, iron	...	...	...	...	1
Burette clips, No. 3, 18 mm.	...	...	...	...	1 doz.
Specific gravity flasks, 25 gms.	...	...	...	...	2
„ tube Sprengel's 10 gms.	...	...	...	...	2
Hydrometers—					
Normal Thermometers from 0 to 100	...	...	...	...	3
Ditto ditto 0 to 360	...	...	...	...	2
Vacuum desiccator, inside diam. 14 cm.	...	...	...	...	1
Desiccators, Hempels, diam. 10 cm.	...	...	...	...	1
Ditto ditto 10 cm.	...	...	...	...	1
Brass syringe for exhausting and condensing length of barrel,	...	...	...	...	1
13 cm. diam. 2½ cm.	...	...	...	...	2
Bell glass receiver, int. height 20 cm. outside diam. 18 cm.	...	...	...	...	1
Davy's No. 4 safety lamp	...	...	...	...	6
Glass stop cocks, bore ⅜ mm.	...	...	...	...	1 doz.
Test glasses, cylindrical (c), 100 cc.	...	...	...	...	1 doz.
Ditto ditto 150 cc.	...	...	...	...	6
Ditto ditto 200 cc.	...	...	...	...	2
Test tube holders, cork-lined, No. 1	...	...	...	...	2 doz.
Test tube of hardest combustion glass, 50 mm. by 10 m.	...	...	...	...	2 doz.
Ditto ditto ditto 75 by 13	...	...	...	...	1 gross.
Test tube, int. diam. ⅜ 10 cm. long	...	...	...	...	6 doz.
Ditto int. diam. ⅝, 10 cm.	...	...	...	...	3 doz.
Ditto 6 in. long, 1 inch diam.	...	...	...	...	1
Decomposition of water app. complete	...	...	...	...	1
Ozon apparatus	...	...	...	...	1 set.
Grove's battery, etc., of set six	...	...	...	...	1 doz.
Connectors' double, large S. W. G.	...	...	...	...	1 lb.
Copper wire, silk covered, double	...	...	...	...	1
Induction coils, Ruhmkorff's with Ruhmkorff's commutator,	...	...	...	...	1
length of spark 75 mm. No. 9	...	...	...	...	1
Apparatus to determine the proportion by vol. of elementary	...	...	...	...	1
gases contained in one vol. of HCl with metal stand	...	...	...	...	1
Apparatus for vol. analysis for ammonia by chlorine and hy-	...	...	...	...	1
pobromide of sodium	...	...	...	...	1
Apparatus to show that 3 vol. of H combine with one of N to	...	...	...	...	1
form 2 vol. of NH <sub>3</sub> with stand	...	...	...	...	1
Apparatus to demonstrate that H and Cl combine to form	...	...	...	...	1
HCl without alteration of vol.	...	...	...	...	1
Apparatus to show that HCl is produced by the combination	...	...	...	...	1
of one vol. of H with one of Cl	...	...	...	...	1
Apparatus to prove that water contains two vols. of H and	...	...	...	...	1
one of O (both limbs graduated)	...	...	...	...	1

	Approximate quantity required.
Apparatus for the decomposition of HCl, carbonelectrodes ...	1
Iron stand for the above ...	1
Apparatus to illustrate the effect of pressure and temp. complete ...	1
Apparatus for the determination of volumetric composition of $\text{NH}_3$ ...	1
Apparatus to illustrate that when H and O combine to form water, the vol. measured at 100 is reduced by $\frac{1}{8}$ ...	1
Iron tripod support for condenser ...	1
Stand ...	1
Apparatus for the decomposition of steam by sparking ...	1
Apparatus to show that O has the same vol. as the $\text{CO}_2$ and $\text{SO}_2$ produced from it ...	2
Stands for the above ...	2
Apparatus for producing Nitric peroxide from air ...	2
Apparatus to show the phenomena of diffusion complete with stand ...	1
Apparatus for obtaining equal vols. of Cl and H by electrolysis ...	1
Atomic weight chart ...	1
Woulff's bottles with two necks, 250 cap ...	6
Ditto ditto 500 cap. ...	6
Apparatus for illustrating Boyle's Law ...	1
Cast iron bottles with screwed stopper for bursting when frozen.	
Charles Schleicher and Schüll's No. 595 Filter paper in sheets of 47 by 54 cm. ...	100
Ditto Circular No. 595, 7 cm. ...	500
Ditto ditto ditto 9 cm. ...	500
Ditto ditto ditto 11 cm. ...	500
Ditto ditto ditto 24 cm. ...	250
Steam bath.	
Air bath.	
Sieves.	
Iron wire gauze.	

--Approximate cost, Rs. 1,300

Reagents, etc., for Lecture room.

--Approximate cost, Rs. 200 (one year's supply).

## B. -B.A. OR B.Sc. STANDARD.

(a) *Practical (in addition to the Intermediate Standard apparatus).*

	Approximate quantity required.
Basins of lead with round bottom with spout $7\frac{1}{2}$ cm. diam. ...	4
Air bath.	
Steam bath.	
Crucibles, fire clay triangular ...	12
Covers for above ...	12
Crucibles and cover of platinum ...	1
Flask, Bohemian, flat bottom, cap. 200 cc. ...	6
Kjeldahl Flask, round bottom, long neck, cap. 300 cc. ...	2
Conical flasks, 400 cc. ...	1
Hot water funnels of copper with glass funnel ...	2
Separatory funnels ...	2

	Approximate quantity required.
Schiff's nitrometer	1
Filter pumps	2
Specific gravity flask with perforated stopper	3
Pipe clay triangle	12
CaCl <sub>2</sub> tube	12
Barometer tubing	1 K
v. Meyer's vapour density apparatus	2
Outer bulb tube for above	2
V. Dy. flasks, small	6
Will and Varrentrap's bulbs	2
Combustion furnace	1
Platinum crucible	5

—Approximate cost, Rs. 300.

Reagents for practical class of 15 students.

—Approximate minimum cost, Rs. 350 (one year's supply).

(b) *List of apparatus for Lecture work (in addition to that for the Intermediate Standard).*

Nickel basin, 10 cm. diam. (weight 9 oz. troy)	1
Platinum basin with spout, 70 cc. cap.	1
Water bath, enamelled iron, with tripod stand, diam. 16 cm.	1
Flasks, conical, Jena glass, Erlenmeyer's	
cap. 200 cc.	6
" 300 cc.	6
Distillation flasks, 100 cc.	2
" 250 cc.	3
" 500 cc.	2
Fractional distillation tube with two bulbs	1
Ditto ditto 30 cm. long	1
Ditto ditto cap. $\frac{1}{2}$ litre	3
Receivers with three necks, 11 $\frac{1}{2}$ litre	3
Crucible and cover roses with gas leading tube	3
Ditto of platinum, cap. 35 ccm.	1
Crucible of copper with cover diam. 8 cm.	2
Crucible of copper with cover diam. 12 cm.	2
Pipe clay triangles	1 doz.
Crucible, No. D., 10 cm. high	2
Covers for the above	2
Tongs, nickel-plated, 20 cm. long	4
" for picking up mercury	1
Potash bulb, Geissler's	2
Ditto ditto	2
Ditto Will and Varrentrap's	2
Kjeldahl flasks, 300 ccm. cap.	3
Pear-shaped glass heads with safety trap	2
Nitrometer, Schiff's	1
Ditto graduated tube, 50 cm. in. 1/5	1
Cairn's Furnace	1
Cupels of bonesh, No. 3-25 mm. diam.	1 doz.
Apparatus for superheated steam, length of body 80 cm.	1
Liebig's condensers, total length 105 cm.	2
Anschutz, Thermometers, Nos. 1.5	1 set.
Beckmann's Thermometer, Range of Scale 6° in 1/100° C	1
Manometer	1





## APPENDIX C.

### DUTIES OF THE CONTROLLER OF EXAMINATIONS.

#### A. WORK PRECEDING THE EXAMINATIONS.

##### *I. Work in connection with dates of Examinations.*

- (i) Fixing of dates.
- (ii) Printing of date-sheets.
- (iii) Issuing and publication of date-sheets.

##### *II. Work in connection with the ascertainment of probable candidates under each subject.*

- (i) Preparation of circular-letters to Heads of Institutions, asking for the requisite figures.
- (ii) Printing of circular-letters.
- (iii) Issuing of circular-letters.
- (iv) Collection of figures from replies received.

##### *III. Work in connection with question papers.*

- (i) Appointment of Paper-setters.
- (ii) Printing of forms of appointment letters, rules, forms of question papers (original and duplicate), and double (inner and outer) envelopes.
- (iii) Apportionment of question papers.
- (iv) Writing out of appointment letters.
- (v) Issuing of appointment letters with enclosures.
- (vi) Arrangements for printing question papers.
- (vii) Arrangements for packing and despatching question papers.

##### *IV. Work in connection with the appointment of Examiners.*

1.
  - (i) Preparation of circular letters with forms, inviting recommendations from Fellows and Heads of Institutions.
  - (ii) Printing of circular letters with forms.
  - (iii) Issuing of circular letters with forms.
2.
  - (i) Compilation of lists of examiners recommended, and candidates for examinerships.
  - (ii) Printing of lists of examiners recommended, and candidates for examinerships.
  - (iii) Circulation of lists to the members of the Boards of Studies, with notices for meetings.
3. Preparation of comparative statement of examiners.
4.
  - (i) Secretariate work in connection with the meetings of the Boards of Studies.
  - (ii) Drawing up of the Proceedings of the Boards of Studies.
5.
  - (i) Appointment of Tabulators, Moderators and Examiners.
  - (ii) Printing of Forms of Appointment letters for Examiners.
  - (iii) Writing out of appointment letters to Examiners, Tabulators, and Moderators.

- (iv) Issuing of appointment letters to Examiners, Tabulators, and Moderators.

*V. Work in connection with the supply of forms, etc., preliminary to Examinations.*

1. (i) Printing of application forms, Admission tickets (original and duplicate), blank answer-books, Logarithm tables, squared papers, Programme of Examinations, and Labels and Addresses for packets of question papers.
- (ii) Issuing of application forms.
2. (i) Printing of letters to Superintendents, Rules for Examinations, and Rules for the guidance of candidates.
- (ii) Issuing of letters, rules, Log tables, answer-books, squared papers, and programmes to Superintendents of centres.

*VI. Work in connection with cases of change of centres.*

- (i) Correspondence.

*VII. Work in connection with the theses presented by candidates for degree Examinations.*

- (i) Circulation of theses to Examiners.  
 (ii) Communication of results to candidates.  
 (iii) Publication of results in the Gazette.

*VIII. Work in connection with the receipt of application forms from candidates.*

1. (i) Receipt of applications.  
 (ii) Scrutiny of applications.  
 (iii) Assigning of Index numbers.
2. (i) Preparation of statements regarding question-papers required in each subject in each centre.  
 (ii) Preparation of envelopes for sending out question papers.
3. (i) Preparation of statements regarding the printing of Roll Cards.  
 (ii) Printing of Roll Cards.  
 (iii) Issuing of Roll Cards.
4. (i) Preparation of Rolls.  
 (ii) Printing of Rolls.  
 (iii) Issuing of Roll sheets to different centres.
5. (i) Writing out of Admission Tickets (original and duplicate).  
 (ii) Despatch of Admission Tickets.  
 (iii) Keeping of records of the despatch of Admission Tickets.

*IX. Arrangement—work in connection with the holding of Examinations at Calcutta centre.*

1. Correspondence on the subject of loan of examination halls.
2. (i) Preparation of statements regarding allotment of candidates to different centres.  
 (ii) Printing of statements regarding allotment of candidates.  
 (iii) Issuing of statements regarding allotment of candidates.
3. (i) Preparation of detailed plan of seats.  
 (ii) Arrangement of furniture, etc.  
 (iii) Assortment of Roll Cards.
4. Supervision work at the University Buildings Centres.
5. Carrying of question papers to different Calcutta Centres.

## B. WORK DURING AND AFTER THE EXAMINATIONS.

### *I. Work in connection with the distribution of answer papers.*

1. Preparation of statements of apportionment of answer papers.
2. (i) Collection of answer papers from different Centres.  
(ii) Despatch of answer books to Examiners.  
(iii) Receipt of answer papers from Examiners.  
(iv) Despatch of answer papers to Head Examiners.
3. (i) Fixing of the latest dates for submission of marks.  
(ii) Printing of Notices regarding the latest dates for submission of marks.
4. (i) Apportionment of slip Rolls for entering marks.  
(ii) Issuing of slip Rolls, rules, question papers and Notices regarding last date for submission of marks to Examiners.

### *II. Work in connection with Practical Examinations.*

1. (i) Fixing of dates for Practical Examinations.  
(ii) Printing of date sheets.  
(iii) Issuing of date sheets.
2. (i) Fixing of Centres for Practical Examinations.  
(ii) Printing of Notices for Practical Examinations.  
(iii) Issuing of Notices for Practical Examinations.
3. Returning Note-Books submitted by candidates in connection with the Practical Examinations.

### *III. Work in connection with the preliminary meetings of Examiners.*

1. (i) Preparation of Notices of meetings.  
(ii) Issuing of Notices of meetings.
2. (i) Printing or typing of Rules for marking determined by examiners.  
(ii) Issuing of Rules for marking to individual examiners.

### *IV. Work in connection with receipt of marks.*

1. (i) Receipt of marks from Examiners.  
(ii) Issuing of marks to Tabulators.
2. (i) Preparation of re-examination slips.  
(ii) Sorting of answer papers for purposes of re-examination.  
(iii) Issuing of re-examination slips and answer papers to be re-examined.  
(iv) Receipt of re-examination marks.  
(v) Issuing of re-examination marks to Tabulators.

### *V. Work in connection with the reporting of Examination results.*

1. (i) Preparation of Notices for meetings of Moderators and Examiners.  
(ii) Issuing of Notices of meetings.
2. Dealing with the reports of Superintendents of Examinations.
3. Preparation of the skeletons of the Reports of Examiners.

### *VI. Work in connection with the publication of results.*

1. (i) Checking of the Office copies of Rolls.  
(ii) Drawing up of the lists of absentees.  
(iii) Writing out of names of Institutions against names of candidates in the Rolls.
2. (i) Preparation of the lists of successful candidates of (a) for sale, (b) for publication in office, and (c) for publication in the Gazette.

- (ii) Arrangement of the lists of successful candidates in alphabetical order as also in order of merit.
  - (iii) Checking of the lists of successful candidates.
  - (iv) Arrangements for publication of the lists of successful candidates in the India and Calcutta Gazettes.
3. (i) Preparation of errata.
  - (ii) Publication of errata in the Gazettes.

*VII. Work in connection with the results after their publication.*

1. (i) Printing of forms of mark-statements and crossed-lists, and of certificates and Diplomas (original, duplicate and provisional), and of special certificates.
- (ii) Writing and signing of the above.
- (iii) Issuing of the above.
- (iv) Keeping records of issuing.
2. (i) Preparation of crossed lists for different institutions.
- (ii) Issuing of crossed-lists.
- (iii) Keeping records of issuing.
3. Correspondence work regarding order of merit.
4. Drawing up of lists for the award of prizes, medals and scholarships.
5. Preparation of the lists of "Bad Schools."
6. Dealing with the reports of Examiners.

*VIII. Work in connection with scrutiny.*

1. (i) Collection of answer papers examined.
- (ii) Arrangement of answer papers for purposes of scrutiny.
2. Drawing up of the lists of applicants for scrutiny.
3. (i) Preparation of covering letters to scrutinisers.
- (ii) Issuing of covering letters with answer papers to scrutinisers.
- (iii) Receipt of Reports of scrutiny.
- (iv) Communication of results of scrutiny.

*IX. Work in connection with statistical information.*

1. (i) Preparation of statements as required by the Education Department of Governments.
- (ii) Issuing of statement.
2. Preparation of tabular statement.
3. Compilation of statements for the Annual Report of the Syndicate

*X. Publication of Calendar.*

1. Printing of Examination Papers in volume form.
2. Printing of class and pass lists in volume form.

## APPENDIX D.

### PRELIMINARY SCIENTIFIC M.B. EXAMINATION.\*

1. Any under-graduate of the University may be admitted to this examination, provided he has fulfilled the following conditions:—

- (a) That he has passed the Intermediate Examination with Physics and Chemistry, and
- (b) That he has completed, since passing the Intermediate Examination with Physics and Chemistry, a regular course of study, theoretical and practical, in the subjects for the examination, for one academical year in a college affiliated to the University for this purpose.

Provided that a candidate who has passed the Matriculation Examination of the Calcutta University and who has, prior to October, 1921, entered a Medical School recognised by the State Medical Faculty of Bengal, may be permitted to appear at the Preliminary Scientific M.B. Examination without having passed the Intermediate Examination in Physics and Chemistry.

2. The Preliminary Scientific M.B. Examination shall be held twice in each year and shall commence at such times as the Syndicate shall determine. Every candidate for admission to this examination shall send to the Registrar his application with a certificate in the form prescribed by the Syndicate, and a fee of Rs. 25, at least fourteen days before the date fixed for the commencement of the examination. A candidate who fails to pass or present himself for examination shall not be entitled to claim a refund of the fee. A candidate may be admitted to one or more subsequent examinations on payment of a like fee of twenty-five rupees on each occasion, on producing a certificate that he has, since the date of the last examination, attended, to the satisfaction of the Principal of his college, a course of study in the subject or subjects in which he last failed at that Examination, provided that after four failures within two years he shall not be admitted to the examination except on the special recommendation of the Principal of the college.

3. Every candidate shall be examined in the following subjects:—Inorganic Chemistry, Physics, Botany and Zoology, (one paper in each). The examination shall be written, oral

\* Chapter XLIV of Regulations, to remain in force up to the examination of 1927.

For Revised Regulations which will come into operation with effect from April, 1928, *vide* page 299.

and practical, three hours being allowed for each paper in each subject.

4. As soon as possible after the examination, the Syndicate shall publish a list of successful candidates arranged in alphabetical order. Every candidate shall, on passing, receive a certificate in the form entered in Appendix A.

5. The course of study for the Preliminary Scientific M.B. Examination shall be—

## INORGANIC CHEMISTRY.

### *Theoretical.*

Chemical and Physical changes; Laws of Chemical action. Indestructibility of matter; the balance; weights and measures; elements and compounds; classification of the elements; Periodic Law. Atoms and molecules; symbols and formulæ; valency; equations, atomic weights; molecular weights.

Laws of Chemical Combination and Dalton's atomic theory, Avogadro's law.

Calculation of formulæ from percentage composition, and calculations relating to weight and volume.

Study of the following:—

Oxygen; oxides; acids; bases and salts; chemical terminology and nomenclature; ozone; allotropy; isomerism, metamerism and polymerism.

Hydrogen; water, its composition by synthesis and analysis; impurities of water; hard and soft water; elements of water analysis; mineral water. Peroxide of hydrogen.

Nitrogen; argon; atmospheric air; nitric acid; oxides of nitrogen; nitrites and nitrates; ammonia and ammonium salts.

Carbon; its oxides; relation of  $\text{CO}_2$  to animal and plant life; coal and coal gas; combustion; structure of flame; cyanogen; hydrocyanic acid; and metallic cyanides.

Chlorine; bromine; iodine; fluorine; their compounds with hydrogen and oxygen; hypochlorites; hypobromites; chlorates and iodates.

Sulphur; its oxides; sulphurous acid, sulphuric acid, hypsulphurous acid, and their salts; carbon di-sulphide.

Phosphorus; oxides and oxy-acids of phosphorus; phosphates; phosphuretted hydrogen.

Boron and silicon; their oxides; boric acid and borax; silicic acid; dialysis; glass and porcelain.

Occurrence in nature, sources and preparation of the following metals and metalloids and their principal compounds, omitting metallurgical processes:—

Arsenic; antimony; bismuth; tin; platinum; gold; silver; mercury; copper; lead; manganese; chromium;

iron; aluminium; zinc; magnesium; calcium; strontium; barium; lithium; sodium; potassium. Special attention will be paid to the general properties and reactions of compounds of medicinal and medico-legal importance and their methods of detection.

During the above course, the common laboratory processes such as *mixture, solution, crystallisation, dissociation, distillation, electrolysis, evaporation, precipitation, filtration, decantation* (syphon), *desiccation, decomposition, separation, oxidation, reduction, and neutralisation* will be demonstrated.

### *Practical.*

Fitting up of simple apparatus.

Use of burettes, pipettes, etc.

Use of the chemical balance.

Performance of experiments involving solution, filtration, distillation, crystallisation, oxidation and reduction.

Determination of the water of crystallisation of hydrated salts.

Preparation and study of the principal properties of hydrogen, oxygen, nitric acid, ammonia, carbon dioxide, hydrochloric acid, chlorine, sulphur dioxide, sulphuretted hydrogen.

Experiments showing the composition of water by electrolysis and of air by burning phosphorus.

Qualitative analysis of a simple salt containing one basic and one inorganic acid radical.

Detection of common impurities in chemicals, such as chlorine in hydrochloric acid; oxides of nitrogen in nitric acid; lead in sulphuric acid; arsenic in medical salt; iodine in potassium iodide; mercuric chloride in mercurous chloride, etc.

Alkalimetry and acidimetry (standardised solutions will be provided).

Candidates must produce note-books of their laboratory work, which must be duly certified by the Professor, and shall be taken into account in estimating their qualifications.

### PHYSICS.

#### *Theoretical.*

States of matter.

General properties of solids, liquids and gases.

Units of measurement and definition of mass, force, motion.

Velocity; acceleration; composition of velocities.

Laws of motion.

Measurement of force. Parallelogram of forces; composition and resolution of uniplanar forces acting at a point.

Moment of a force; Levers and simple pulleys.

Centrifugal and centripetal forces.  
 Gravitation; weight; centre of gravity.  
 Laws of falling bodies.  
 The Pendulum.  
 Work and Energy; Conservation of Energy.  
 Elementary ideas of wave-motion.  
 Laws of pressure of liquids and gases.  
 Measurement of pressure.  
 Principle of Archimedes; equilibrium of floating bodies.  
 Specific gravity and its determination; hydrometer, urinometer, lactometer.  
 Physical properties of gases—Relation of volume to temperature and pressure—Dalton's or Charles' Law—Boyle's Law; Calculations of volumes from weights; Reduction to normal temperature and pressure (N.T.P.)  
 Gay Lussac's Law.  
 Diffusion, liquefaction and solidification of gases  
 Atmospheric pressure—Barometers; air-pumps; syphons

#### *Sound—*

The production and propagation of sound, velocity of sound in air.  
 Reflection and refraction of sound.  
 Relation between frequency and pitch.  
 Vibration of strings; sonometer.  
 Vibration of the air column; organ-pipes.  
 Human voice; the ear.  
 The stethoscope: the air-trumpet.

#### *Heat—*

Laws of expansion of solids, liquids, and gases.  
 Temperature.  
 Measurement of temperature; thermometers; the clinical thermometer; the maximum and minimum thermometers.  
 Radiation, conduction and convection.  
 Reflection and absorption.  
 Vapour pressure; boiling point; dew point; hygrometers: formation of clouds, rain, fog, dew, etc.  
 Changes of state; specific heat and latent heat; calorimetry; sources of heat.

#### *Light—*

Sources of light.  
 Propagation of light.  
 Shadows; photometer.  
 Reflection and refraction of light.  
 Mirrors; prisms; lenses; chromatic dispersion.  
 Spectrum; spectroscopy; colours.  
 Optical instruments; the microscope; the telescope; the



photographic camera; the eye; mechanism of vision; short and long sight.

*Magnetism and Electricity—*

Properties of magnets; magnetic induction.  
 Methods of magnetisation.  
 Magnetic field.  
 The earth as a magnet; mariner's compass.  
 Electricity by friction.  
 Positive and negative electricity.  
 Laws of electrical attraction and repulsion.  
 Conductors and non-conductors; insulation; electrical induction; electroscopes.  
 Electrostatic machines; electrophorus.  
 Potential; capacity; quantity.  
 Condensers; the Leyden jar.  
 Effects of electricity.  
 Atmospheric electricity; lightning conductors.  
 Voltaic cell; electric current.  
 Batteries.  
 Effects of dynamical electricity; galvanometers.  
 Electromotive force; potential; resistance.  
 Ohm's Law; volt, ohm, ampere.  
 Electro-magnets.  
 Induced currents; Ruhmkorff's coil.  
 Mutual forces between currents and magnets and between currents and currents.  
 Röntgen Rays.  
 Medical batteries.

*Practical Course.*

Length measurement; use of vernier.

Determination of the specific gravity of solids and liquids, including the use of the hydrostatic balance, hydrometers and specific gravity bottles.

Determination of the focal length of a convex lens.

Construction of a common battery.

Use of the following apparatus:—

Syphon; thermometers; dry and wet bulb thermometers; Daniel's hygrometer; barometers; microscope; simple mirrors and lenses; spectroscope; gold-leaf electroscope; electrophorus; simple induction coil; magnet; magneto-electric machine.

Candidates must produce note-books of their Laboratory work which must be duly certified by the Professor, and shall be taken into account in estimating their qualifications.

The whole subject will be treated in an elementary manner,

## BOTANY.

*Theoretical.*

The elementary differences and resemblances between plants and animals—Life-histories of selected types of unicellular and multi-cellular plants—Yeast—Chroococcus—Cosmarium—Mucor—Spirogyra—Alothrix—Vancheria—Peronospora—Moss—Fern—Selaginella—Gymnosperm—Angiosperm.

*General morphology of flowering plants.*—*The root*:—Characters—Forms—Consistence—Branch roots—Adventitious roots—Metamorphosis of roots—Roots of epiphytes—Parasites—Saprophytes—Mycorrhiza—Uses of roots to man.

*The stem.*—Characters—Forms—Duration—Buds—Modes of Branching—Regions of stem—Microscopic structure in mosses, ferns, monocotyledons, conifers, dicotyledons—Metamorphosis of stems—Uses of stems to man.

*The leaf.*—Characters—Phyllotaxy—Prefoliation—Leaf-sheath—Leaf-stalk—Leaf-blade—Compound leaves—Heterophylly—Modifications of leaves—Uses of Leaves to man—Stipules and their modifications—Hairs and their modifications—Prickles—Stings.

*The flower.*—Essential and accessory organs—Bracts and their special forms—Inflorescence: Indefinite, definite, mixed—The typical flower—Modes of deviation from the perfect types.

*The perianth.*—Number of part—Prefloration—Calyx—Corolla and modifications—Andræcium—Gynæcium—Nectarics—Pollination and fertilisation of ovules.

*The fruit.*—Its morphology—Classification of fruits. *Seed*: its morphology and modes of distribution.

*Classification of flowering plants.*—General principles of classification—Species—Hybrids—Genera—Orders—Classes—Nomenclature—Modes of describing plants—Eight Natural Orders (to be notified by the Syndicate from time to time).

*Microscopic anatomy of flowering plants: The cell.*—Protoplasm—Test for protoplasm—Nucleus—Cell-wall—Cell-contents—Plastids—Reserve Proteids—Starch—Mineral deposits—Substances in cell-sap—Fats, oils, etc.—Nutrition of cell—Formation of new cells—Modification of cells—Tissues—Origin of tissues—Laticiferous vessels—Glands—Resin-passages—Air-passages—Tissues in Thallogens, Vascular Cryptogams and Phanerogams—Development of embryo of vascular plants and of its tissue-systems.

*The root.*—Development and micro-structure from tip backwards—Development of lateral roots—Secondary changes in roots—Fleshy roots—Uses of each of the tissues of roots to plants—Process of movement of roots.

*The Stem.*—Development and micro-structure—Primary structures of stems—Secondary structures of stems—Modifica-

tion in subterranean and in metamorphosed stems—Microscopic peculiarities of stems of Conifers, Ferns, Lycopods, and Selaginella—Mechanical uses of tissues.

*The leaf.*—Origin—Structure of leaf-blade, leaf-sheath, and leaf-stalk,—the pulvinus, its structure and function—Phyllode—Structure of anomalous and metamorphosed leaves—Fall of leaf—Glands and nectaries on leaves—Bud-scales and stipules.

Reproductive organs of Phanerogams—Micro-structure and development of members of flower-bud—Perianth—Stamens—Carpels—Ovules—Fruits—Seeds.

*Nutrition and growth* in ordinary green plants and their peculiarities in other plants—Chemical elements in plants—How to ascertain the composition of plants—Physiological classification of tissues, protective, nutritive, reproductive. Food of green land plants—Ascent and movements of sap—Elaboration of the sap—Assimilation and Metastasis—Phenomena of growth—Temperature and light in relation to plant life—Movements in plants.

*Reproduction.*—Asexual or vegetative—Sexual—Alternation of generations—Deviations from the normal cycle of reproduction.

Elementary facts of plant-Geography

### *Practical.*

Candidates must be prepared to examine microscopically, to dissect and to describe specimens or parts of the selected types of plants in the foregoing syllabus.

Candidates must produce note-books of their Laboratory work which must be duly certified by the Professor, and shall be taken into account in estimating their qualifications.

The whole subject will be treated in an elementary manner.

### ZOOLOGY.

#### *Theoretical.*

The scope of Zoology and its relationship to other Sciences.

The nature of living matter and the contrast between the Animal and the Plant.

The Cell—its structure and function.

Cell division.

The morphology and life history of Amœba, Vorticella, Nyctotherus and Monocystis. A summary of the main characters of the Protozoa.

The Morphology and life history of Hydra, and a comparison between the Protozoa and Metazoa.

Comparison of the Coelomata and the Coelenterata.

The functions of the Cœlom.

The Morphology and life history of the Earthworm.

The Morphology and life history of the Prawn (*Palæmon*) and the Cock-roach, and compare them with the typical structure of the Annelida.

The Morphology of the fresh water Mussel (*Unio*), and the land snail (*Achatina*).

The general characters of the Vertebrata.

The Morphology of a fish—preferably an Elasmobranch.

The Morphology of the Toad (*Bufo*), and comparison with the fish.

The Morphology of the Mammal (Guinea-pig).

An elementary study of the development of the chick and the rabbit.

The development of the Amnion and Allantois and the formation of the placenta.

Outlines of the theories of Evolution, Darwinism, and Mendelism.

### *Practical Course.*

The use of the microscope. A general acquaintance with the tissues of the animal body.

Dissection of each of the above-mentioned types and a detailed knowledge of their structure.

Candidates must produce note-books of their Laboratory work, which must be duly certified by the Professor, and shall be taken into account in estimating their qualifications.

The whole subject will be treated in an elementary manner.

6. Exemptions may be granted in respect of the Preliminary Scientific M.B. Examination as follows:—

- (i) Any candidate who, in the Intermediate Examination in Arts or Science, has passed in one or more of the following subjects, namely, Chemistry, Physics, Botany, Zoology, shall be excused attendance at lectures and the practical work, and also the theoretical portion of the examination in the corresponding subject. No such candidate shall, however, be excused the oral and practical portion of the examination in any subject.
- (ii) Bachelors of Science who have passed in Physics, Chemistry, Botany or Zoology at the B.Sc Examination shall be excused attendance at lectures and the practical work, and also the theoretical, oral and practical examination in the subject in which they have already passed.

7. The full marks for each subject and the minimum marks required for passing shall be as follows:—

		Written.	Oral.	Practical.	Total marks.	Passing marks.	Passing marks in Practical.
Chemistry	...	400	50	150	600	240	60
Physics	...	200	50	50	300	120	20
Botany	...	200	100	100	400	160	40
Zoology	...	200	100	100	400	160	40

#### FIRST M.B. EXAMINATION.\*

1. Any undergraduate of the University who has fulfilled the following conditions may be admitted to the examination:—

- (a) that he has passed the Preliminary Scientific Examination at least two years previously;
- (b) that he has subsequently to passing the Preliminary Scientific Examination, attended a regular course of study, theoretical and practical, in the subjects of the examination for not less than two years at a College of Medicine affiliated to the University up to the standard of the First M.B. Examination.

Any candidate who has passed the Intermediate Examination in Science shall be permitted to present himself at the Preliminary Scientific M.B. Examination at the same time as he presents himself at the First M.B. Examination, or at any previous examination for the Preliminary Scientific M.B. The provisions of Regulation 6 of Chapter XLIV shall apply to such candidates.

2. The First M.B. Examination shall be held twice in each year and shall commence at such times as the Syndicate shall determine. Every candidate for admission to the examination shall send to the Registrar his application, with a certificate in the form prescribed by the Syndicate and a fee of Rs. 30, at least fourteen days before the date fixed for the commencement of the examination, mentioning at the same time the

\* Chapter XLV of Regulations, to remain in force up to the examination of 1932.

For Revised Regulations which will come into operation with effect from April, 1930, *vide* page 308.

subject or subjects, if any, in which he desires to take up Honours. If a candidate takes up Honours, he shall pay an additional fee of Rs. 30. A candidate who fails to pass or present himself for examination shall not be entitled to claim a refund of the fee, but may be admitted to one or more subsequent examinations on payment of the prescribed fee on each occasion, on producing a certificate that he has, since the date of the last examination, attended to the satisfaction of the Principal of his college a course of study in the subject or subjects in which he last failed at that examination, provided that after four failures within two years he shall not be admitted to the examination except on the special recommendation of the Principal.

3. Every candidate shall be examined in the following subjects:—Anatomy, Physiology, Pharmacology including Pharmacy, Materia Medica and Therapeutics, and Organic Chemistry (with special reference to organic compounds in the British Pharmacopœia).

The examination shall be written, oral and practical. Three hours shall be allowed for each paper in each subject.

The examination in Anatomy shall consist of—

- (a) One theoretical paper.
- (b) Dissection.
- (c) An oral examination.

The examination in Physiology shall consist of—

- (a) One theoretical paper.
- (b) A practical examination.
- (c) An oral examination.

The examination in Pharmacology, including Pharmacy and Materia Medica, shall consist of—

- (a) One theoretical paper.
- (b) An examination in Practical Pharmacy.
- (c) An oral examination, which may include the recognition of the more important substances in the British Pharmacopœia.

The examination in Organic Chemistry shall consist of—

- (a) One theoretical paper.
- (b) A practical examination within the scope of the Syllabus.
- (c) An oral examination.

4. In all subjects other than Organic Chemistry, the candidate may be examined for Honours as well as Pass.

5. The scope of the examination for Honours in each subject shall be wider than that required for the Pass Examination, an extra paper being given for each subject, and the candidate shall have to undergo a further and more searching oral and

practical examination. The examination will not necessarily be confined to the Syllabus, if any, prescribed in that subject.

The examination for Honours shall be held once a year only, namely, in connection with the examination held in March or April and one week after the results of the Pass Examination shall have been declared by the Examiners. No candidate shall be admitted to the Examination for Honours, unless (1) he has been successful at the immediately preceding Pass Examination, and (2) he has also obtained at the Pass Examination in the special subject in which he desires to take Honours, one-half of the marks allotted to each portion of the Examination, written, oral and practical and two-thirds in the aggregate. A candidate who is excluded from the Examination for Honours under the operation of this Rule, shall be entitled to a refund of the additional fee paid by him for admission to the Honours Examination.

6. As soon as possible after the examination, the Syndicate shall publish a list of candidates who have passed together with a list of those who have obtained Honours in any subject, arranged in order of merit.

On the recommendation of the Examiners, a Gold Medal may be awarded to the candidate who has most distinguished himself in Honours in any branch of the examination.

7. The course of study for the First M.B. Examination shall be as follows:—

### ANATOMY.

The curriculum in Anatomy shall consist of (1) a complete course on Human Anatomy, (2) a course of dissections extending over two winter sessions.

### PHYSIOLOGY.

The curriculum in Physiology shall consist of (1) a theoretical course of lectures on Physiology, (2) a practical course of experimental Physiology extending over not less than three months, (3) a practical course of normal Histology extending over not less than three months, (4) a course of elementary Physiological Chemistry (including practical exercises) extending over not less than three months.

The General Histology of the animal cell, Epithelial and connective Tissues, Histology and Physiology of the Contractile Tissues, Blood and Lymph: the circulation of the Blood and Lymph embracing the mechanism of the circulation of the blood and of the movements of the Lymph.

The innervation and nutrition of the Heart and the innervation of the blood vessels.

The Histology of the organs of Respiration and the Physiology of Respiration including the Chemistry thereof.

The general chemical composition of the Body; the Chemistry of Digestion and Nutrition; the Physiology of Absorption; Excretion and Metabolism; Animal Heat; Ductless Glands; Internal Secretion. The Structure, Development and Functions of the central Nervous System and Organs of the special Senses. Reproduction and Development.

#### Experimental Physiology.

A practical knowledge of the working of the more important physiological instruments including a knowledge of the chief experiments illustrating the functions of the organs and tissues of the body and the methods made use of in recording the results obtained in a graphic manner.

The course shall include—

I. Muscle nerve preparation—results, of stimulation by different forms of stimuli—action of interrupted and constant current—Tetanus—Muscle sound—Fatigue—Work done—influence of temperature, Load, Drugs. Elasticity and Extensibility of muscle—Electrotonus—Reaction of Degeneration, etc.

#### II. Frog's Heart—

Graphic record of beat—Stannius' experiment—Gaskell's clamp—Latent Period of Heart—Action of heat, cold and constant current—Innervation. Endocardial Pressure—Action of Drugs on Frog's Heart.

#### III. Mammalian Heart—

Its Nutrition, Perfusion experiments. Cardiac Impulse—Sounds—Cardiograph—Action of Drugs, etc.

#### IV. Blood Vessels.

Pulse—Sphygmographic tracings. Sphygmoscope. Blood-pressure and methods of measuring it.

Stromuhr—Kymograph—Manometers, etc., clinical methods as by Hill's sphygmometer, Plethysmographs, etc.

V. Lungs—Vital capacity—Elasticity of Lungs, Pneumograph. Laryngoscope, etc.

VI. Reflex action—knee-jerk, action of Poisons on nervous system.

VII. Eye—Accommodation—Phakoscope—Astigmatism and Defects. Phosphenes, Retinal shadows—Perimetry. Colour vision—Colour Blindness—Contrast. Stereoscope, Ophthalmoscope, etc.

VIII. Cutaneous Sensations—Cold, Hot, Pressure and Pain Spots—Muscular Sense—Resistance, etc.

IX. Taste, Smell, Hearing—Stereognostic Sense, etc.

#### Normal Histology.

Methods of preparation of the different tissues of the Body for histological purposes—

(1) Hardening, Embedding, Section-cutting, Staining and Mounting.



## (2) Histology of the Blood.

Enumeration of red and white blood corpuscles.

Differential Count of the white blood corpuscles,  
crystals of Hæmoglobin.

## (3) Recognition of sections of the different tissues of the Body.

## Chemical Physiology—

## (1) General chemical reactions and composition of Carbohydrates, Fats, Proteids and allied substances.

## (2) Chemical Composition of Animal and Vegetable Food-stuffs.

## (3) Chemistry of Digestion.

Action of Saliva, Gastric juice, Succus Entericus,  
and Bacterial Digestion.

## (4) The Liver and Products of its activity.

## (5) The Blood.

Estimation of alkalinity and gases of blood.  
Coagulation time, Estimation of Hæmoglobin.  
Spectroscopic Examination of blood pigments.  
Detection of blood stains.

## (6) Chemistry of Urine.

Normal and Pathological Urine-Testing and  
Sediments. Estimation of quantity of Blood,  
Uric acid, Urea, Sugar, Chlorides, Phosphates;  
Total Nitrogen. Pigments of Urine—Polarimeter—Amount of Albumen, Albumoses, etc.

## (7) Chemistry of Gastric juice. Estimation of acidity. Tests for Hydrochloric acid, Lactic acid, Butyric acid.

## (8) Cryoscopy, Osmosis and Osmotic Pressure. Analysis of gases of expired air.

At the Practical Examination, students will be expected to show knowledge of the following subjects:—

(i) In normal Histology including a knowledge of preparation of tissues for microscopic examination. Fixing, hardening, embedding, section-cutting, staining, clearing, mounting and recognition of specimens.

Enumeration of red and white blood corpuscles.

Differential enumeration of white blood corpuscles.

(ii) In Physiological Chemistry, including a practical knowledge of the coagulation and alkalinity of the blood.

Estimation of Hæmoglobin of the blood.

Chemical composition and tests for—

Carbohydrates and fats.

Proteids.

Principal food-stuffs.

Saliva.

Peptic and pancreatic digestion, and analysis of digestive juices HCl, inferior, *viz.*, lactic acid, etc.

Bile, blood, milk, urine. Quantitative examination of albumen, sugar, urea and chlorides in urine.

Pigments.

The use of simple spectroscope and saccharimeter.

(iii) In experimental Physiology including a knowledge of and the uses of the more important physiological apparatus. Physiological experiments illustrating the function of—

(1) Nerve and muscle.

- Single contraction, Tetanus, Excitability, Fatigue, etc. Modifications of contractions under different conditions. The graphic method to be made use of.

(2) Experiments on frog's heart.

Stannius' experiment, action of heat and cold.

Cardiograph action of drugs on heart's beat.

(3) Method of using the different forms of Sphygmographs:—

Marey's, Dudgeon's, Jacquet's.

Tracings to be made.

(4) Estimation of the blood pressure in different parts of the body.

Use of Hill and Barnard Sphygmometers and Oliver's Hæmo-Dynamometer.

(5) The nervous regulation of Respiration.

The Stethometer and Pneumograph.

(6) Reflex action.

(7) Experimental Physiology of Eye. Accommodation, Colour Sense, Perimetry.

Candidates must produce note-books of their Laboratory work which must be duly certified by the Professor, and shall be taken into account in estimating their qualifications.

## PHARMACOLOGY, INCLUDING PHARMACY AND MATERIA MEDICA.

The curriculum shall consist of a theoretical course of lectures and a course of instruction in practical pharmacy extending over not less than two months, including practical knowledge of the preparation of medicines and of the constituents of the more important compounds of the British Pharmacopœia as also prescription writing.

The systematic course of lectures will deal briefly with the natural history, and the sensible and chemical properties of all drugs and medicinal agents mentioned in the British Pharmacopœia and will also include full account of their pharmacological action upon the chief functions of the body, *viz.*, Circulation, Respiration, Digestion, Absorption, Secretion and Excretion, Metabolism, Heat regulation, Motor, Sensory and Reflex Mechanism, and the chemical transformations undergone in the

body by the principal medicinal substances. The Therapeutic uses and modes of administration of the official drugs and medicinal agents will be also included in the lectures, and as far as time and opportunity allow, reference will also be made to the most important of the more recently introduced drugs and their probable mode of action explained as far as is known.

## ORGANIC CHEMISTRY.

### *Theoretical.*

Analysis of organic compounds, Estimation of C, H, N, S, P, and the halogens.

Empirical and molecular formulae.

Determination of molecular weights.

Determination of melting and boiling points.

Fractional distillation.

Students will be expected to know the general properties of the following groups of compounds, illustrated in each case by reference to a few of their more important members:—

#### *Aliphatic Series:—*

Paraffins (methane and ethane).

Unsaturated hydrocarbons (ethylene and acetylene).

Alcohols and their derivatives (methyl alcohol, ethyl alcohol and glycerol).

Aldehydes (formaldehyde and chloral hydrate).

Ketones (acetone).

Acids (formic, acetic, lactic, oxalic, tartaric and citric).

Ethyl Ether

Esters (saponification).

Carbohydrates. Sugars (glucose, lactose, maltose, and cane sugars); starches; glucosides.

Cyanides; urea; uric acids.

#### *Aromatic Series:—*

Benzene and its simple derivatives.

Phenols (Phenol and resorcinol).

Acids, Benzoic and Salicylic.

Vegetable alkaloids.

### *Practical.*

Test for the following elements in organic compounds:—

Carbon, hydrogen, nitrogen, sulphur, phosphorus and chlorine.

Tests for and reactions of ethyl alcohol. Preparation of chloroform and iodoform ethyl alcohol.

Preparation of fatty acids from a fat.

Preparation of a salt from an organic base or of a base from one of its salts, *e.g.* (quinine sulphate and *vice versa*).

Recognition of important alkaloids by ordinary tests.

Test for urea. Test for glucose and cane sugar.

Tests for phenol and salicylic acid.

The more important tests for acetic, oxalic, tartaric and citric acids.

Analysis of urine and urinary calculi.

Candidates must produce note-books of their Laboratory work, which must be duly certified by the Professor and shall be taken into account in estimating their qualifications.

The whole subject will be treated in an elementary manner.

8. The full marks for each subject and the minimum marks required for passing shall be as follows:—

	Written.	Oral.	Practical.	Total marks.	Passing marks.	Passing marks in Practical.
Anatomy ...	600	200	200	1,000	500	100
Physiology ...	600	200	200	1,000	500	100
Pharmacology, etc.	600	200	200	1,000	500	100
Organic Chemistry	200	50	50	300	120	20

In order to obtain Honours in any branch candidates must obtain one-half of the marks allotted to each portion of the examination, written, oral and practical and two-thirds in the aggregate.

#### FINAL M.B. EXAMINATION.\*

1. Any candidate who fulfils the following conditions may be admitted to this examination:—

(a) That he has passed the First M.B. Examination at least three years previously.

(b) That he has subsequently to passing the First M.B. Examination, completed a regular course of study, theoretical and practical, in the subjects of the examination in a College of Medicine affiliated to the University up to the standard of the Final M.B. Examination. Any candidate, who (1) has passed the Matriculation Examination of the Calcutta University and has entered prior to October, 1921,

\* Chapter XLVI of Regulations, to remain in force up to the examination of 1932.

For Revised Regulations which will come into operation, with effect from April, 1933, *vide* page 315.

a Medical School recognised by the State Medical Faculty of Bengal or (2) has entered after passing the Intermediate Examination with Physics and Chemistry, may be permitted on passing the Final Examination of that Medical School, to appear at the Final M.B. Examination two years after passing the First M.B. Examination. The provisions of present section I clause (b) shall apply to such candidate.

Provided that a candidate may appear in Part II (but not in Part I) of the Examination (as defined below in Section 7) on the completion of regular course of study, theoretical and practical, for two years in an affiliated College subsequently to passing the First M.B. Examination.

The Final M.B. Examination shall be divided into two parts:—Part I and Part II, embracing the Major and Minor subjects, respectively, as defined below. The examination in each Part shall take place twice a year at such times as the Syndicate shall determine. A candidate may either take up both parts together, or one part only, either Part I or Part II, at that time, leaving the other for a subsequent examination.

3. Every candidate for admission to the examination shall send to the Registrar his application, with a certificate in the form prescribed by the Syndicate at least fourteen days before the date fixed for the commencement of the examination, mentioning at the same time the subject or subjects (if any) in which he desires to take up Honours.

4. A fee of fifty rupees shall be payable by each candidate taking up the two parts of the examination together; but if Part I and Part II be taken separately, the fee for each Part shall be Rs. 30. A candidate who takes up Honours in any subject shall pay an additional fee of Rs. 30. A candidate who fails to pass or present himself for examination shall not be entitled to claim a refund of the fee. A candidate may be admitted to one or more subsequent examinations on payment of the prescribed fee on each occasion, provided he produces a certificate that he has taken, to the satisfaction of the Principal of his College, a course of study in the subject or subjects in which he is to be re-examined, and this study must have been pursued not only since the date of his failure but within the six months preceding his re-examination.

5. A candidate, who fails in Part II of the Final M.B. Examination may be re-examined in the subject or subjects in which he failed within six months from the date of failure.

6. Part I of the Final M.B. Examination must be passed as a whole.

Provided that a candidate, who has appeared in all the major subjects and has failed in only one of them, shall be admitted at the next two subsequent Examinations of the Final

M.B. candidates, at which he shall be re-examined in that subject only in which he has been rejected: provided that he presents himself for re-examination within twelve months or one academic year from the date of the Examination in which he failed. If he fails to present himself for re-examination within twelve months or one academic year, or fails to pass in that subject during that period, he shall be re-examined in all the major subjects.

7. Every candidate shall be examined in the following subjects:—

- |                                |   |  |
|--------------------------------|---|--|
| Major<br>Subjects,<br>Part I.  | { | 1. Medicine (including Therapeutics, special Pathology and Mental Diseases). |
|                                | { | 2. Surgery including Ophthalmology.  |
|                                | { | 3. Midwifery and Gynæcology.   |
|                                | { | 4. General Pathology (including Bacteriology and Parasitology).              |
| Minor<br>Subjects,<br>Part II. | { | 5. Medical Jurisprudence.  |
|                                | { | 6. Hygiene.  |

The examination in Medicine shall consist of—

- (a) Two theoretical papers.
- (b) A clinical examination of a patient and written report thereon.
- (c) An oral examination.

The examination in Surgery shall consist of—

- (a) Two theoretical papers.
- (b) A clinical examination on cases.
- (c) An oral examination in which questions on the use of surgical instruments and appliances, on the application of splints and bandages and on museum specimens illustrating Surgical Pathology shall form a special part.
- (d) Operations on the dead body.

The examination in Midwifery and Gynæcology shall consist of—

- (a) One theoretical paper.
- (b) An oral examination including questions on specimens, instruments and appliances.
- (c) Obstetric operations on the manikin.

The examination in General Pathology shall consist of—

- (a) One theoretical paper.
- (b) A practical examination within the scope of the Syllabus.
- (c) An oral examination including questions on museum specimens.

The examination in Medical Jurisprudence shall consist of—

- (a) One theoretical paper.

- (b) An oral examination.
- (c) A practical examination to include examination on the dead body on points of Medico-legal importance as arising out of, or as illustrated by, the conditions observable on the dead body, the actual methods post-mortem examination for Medico-legal purposes, the putting up of materials for Medico-legal-chemical analysis and the writing of Medico-legal post-mortem reports.

The examination in Hygiene shall consist of—

- (a) One theoretical paper.
- (b) An oral examination.

8. In every subject other than Hygiene a candidate may be examined for Honours as well as for Pass.

The scope of the examination for Honours in each subject shall be wider than that required for the Pass Examination, an extra paper being given in each subject; and the candidate shall have to undergo a further and more searching oral and practical examination. The examination will not necessarily be confined to the Syllabus, if any, prescribed in that subject.

The examination for Honours shall be held once a year only, namely, in connection with the examination held in March, or April and one week after the results of the Pass Examination shall have been declared by the Examiners. No candidate shall be admitted to the examination for Honours, unless (1) he has been successful at the immediately preceding Pass Examination taking up Parts I and II together and (2) he has also obtained at the Pass Examination in the special subject in which he desires to take Honours, one-half of the marks allotted to each portion of the Examination, written, oral and practical and two-thirds in the aggregate. A candidate who is excluded from the Examination for Honours under the operation of this Rule, shall be entitled to a refund of the additional fee paid by him for admission to the Honours Examination.

9. As soon as possible after the examination, the Syndicate shall publish a list of the candidates who have passed, arranged in alphabetical order, and of those who have taken Honours in any branch, arranged in order of merit.

Every candidate on passing shall receive a diploma in the form given in Appendix A. On the recommendation of the examiners a Gold Medal may be awarded to the candidate who has most distinguished himself in Honours in any branch of the examination.

10. The course of study shall be as follows:—

### MEDICINE.

(1) A course of lectures on the principles and practice of Medicine.

(2) A course of not less than twenty demonstrations on Clinical methods, Physical Diagnosis and the use of instruments of observation used in Medicine.

(3) Attendance upon the medical practice of a recognised hospital for three years, with clinical instruction and lectures in clinical medicine and experience as clinical clerk for twelve months during this period (with a careful record of at least six medical cases which the candidate may be required to produce before the Examiners).

(4) A course of lectures on Mental Diseases with clinical demonstrations at a recognised Asylum for a period of one month.

Mental constitution, Mental character, Mental health.

Sleep—Insomnia and its treatment.

The examination of Mental cases.

Diagnostic characters of insanity.

Causation—Prognosis—General Principles of treatment.

Melancholia, Katatonia, Catalepsy, Partial Insanity, Chronic.

Progressive, delusional Insanity, Mania.

Dementia, Mortal Insanity, General Paralysis of the Insane.

Epileptic Insanity, Inebriety, Concomitant Insanities, Alcoholic Insanity, Puerperal and allied insanities

Idiocy and imbecility. The backward and feeble-minded.

The legal and civil aspects of Mental Diseases.

(5) Three months of attendance at the Medical Out-door Dispensary of a recognised hospital.

## SURGERY.

(1) A course of lectures on the principles and practice of Surgery.

(2) Courses of instruction in—

(a) Operative Surgery, and Surgical Anatomy of not less than 30 demonstrations,

(b) Surgical case-taking, and Practical Surgery (including minor Surgery and bandaging) of not less than 30 demonstrations and

(c) The administration of Anæsthetics.

(3) Attendance upon the Surgical practice of a recognised Hospital during three years with clinical instruction and lectures on clinical Surgery and twelve months' practice as dresser during that period with a careful record of at least six surgical cases which the candidate may be required to produce before the Examiners.

(4) A course of lectures in Ophthalmology.

Examination of the Eye: (a) objective, (b) functional Diseases of the Conjunctiva, Cornea, Sclerotic, Iris, Ciliary body, Choroid Lens, Vitreous, Retina, Optic nerve, Lids,



Lachrymal organs and Orbit, Congenital Defects. Amblyopia and functional disorders of Sight, Glaucoma.

Disturbances of mobility of the Eye.

Optical properties of the normal Eye, and the theory of spectacles.

Anomalies of Refraction and Accommodation.

Operations and their technique.

Practical instruction in Ophthalmoscopy and Refraction..

(5) Three months of attendance at a recognised Hospital for diseases of the Eye.

(6) Three months of attendance at the Surgical Out-door Dispensary of a recognised Hospital.

### MIDWIFERY AND DISEASES OF WOMEN.

Instruction during a period of at least two terms comprising—

1. Courses of systematic instruction in the principles and practice of obstetrics and gynaecology.

2. Lectures or Demonstrations in Clinical Obstetrics and Gynaecology and attendance on in-patient and out-patient gynaecological practice.

3. Instruction in the following subjects, *viz.* :—

(a) Ante-natal conditions.

(b) Infant Hygiene.

4. Every student should, after attending the course of systematic instruction in the principles and practice of Surgery and of Obstetrics, give continuous attendance on Obstetrical Hospital Practice under the supervision of a competent officer for a period of three months, during one month of which at least he should perform the duties of an intern student in a lying-in hospital or ward. He should attend during the period twenty cases of labour under adequate supervision. Extern or district maternity work should not be taken until the student has personally delivered at least five cases in the lying-in hospital or ward to the satisfaction of his teacher.

A certificate of having attended twenty cases of labour should state that the student has personally attended each case during the course of labour, making the necessary abdominal and other examinations, under the supervision of the certifying officer, who should describe his official position and state how many of the twenty cases were conducted in hospital.

### PATHOLOGY.

(1) A course of lectures on General Pathology including Bacteriology and Parasitology treated in an elementary manner.

(2) A course of practical instructions and demonstrations extending over not less than four months.

(3) Attendance in the post-mortem room for not less than three months and the careful performance of six post-mortems in the presence of the Teacher or his Assistant.

General Pathology—Definition, Health and disease. *Ætiology*. Heredity and environments. Defects of development. Processes of Infection and Immunity. Disorders of Nutrition and Autointoxication, Dropsy, Disorders of the blood and circulation. Degenerations and retrogressive changes. Processes of inflammation and repair. The process of fever. The more important structural changes produced in the organs and tissues by disease as recognised by the naked eye and microscopical investigations. Tumours and specific granulomata.

Bacteriology—The Morphology and Biology of the following micro-organisms:—Pyogenic Cocci, Pneumococcus and Gonococcus; B. Coli Communis; B. Anthracis; B. Diphtheriæ; B. Lepre; B. Tetani; B. Tuberculosis; B. Typhosus; Vibrio Cholerae Asiaticæ; B. Pestis; Streptothrix Actinomycosis group; B. Dysentericus; M. Melitensis, Diplococcus Inter-cellularis Meningitidis; B. Influenzæ; Spirillum Obermeieri; Spirochæte of Syphilis; Pathogenic moulds.

Parasitology—The Morphology and Biology of the following:—Hæmatozoon Malariae; Piroplasma, Amœba coli; Amœba dysenterica; Trypanosomes; Distomum Hepaticum; Distomum crassum; Ascaris Lumbricoides; Oxyurias Vermicularis; Trichina Spiralis; Anchylostomum duodenale; Filaria Sanguinis Hominis; Dracunculus Medinensis; Tricocephalus Dispar; Tænia Solium; Tænia Mediocanellata; Tænia Echinococcus; Bothriocephalus latus; Bilharzia hæmatobia; Parasite of Kala-zar; Amphistomum Hominis; Acarus Scabiei; Pediculi.

### *Practical.*

Technique of collection and pathological examination of morbid materials such as Blood, Gastric and Intestinal contents, Urine, Pus, Sputum and Exudates.

A practical knowledge of the apparatus used for bacteriological work, *viz.*,—Hot air Steriliser, Stem Steriliser, and Incubator. Preparation of culture media. Culture and inoculation methods.

Preparation, section-cutting, staining and mounting of pathological tissues and their microscopical examination with a view to their recognition.

## MEDICAL JURISPRUDENCE.

(1) A course of lectures on Medical Jurisprudence.

(2) Attendance at not less than twelve medico-legal post-mortem examinations.

Medical evidence, with special reference to Indian Evidence Act. Medico-legal Reports. Dying Declarations.

Signs of Death. Post-mortem stains. Rigor Mortis. Cadaveric Spasm. Putrefaction in Air and Water.

Mummification. Adipocere Examination of the dead body. Post-mortem Examination in medico-legal cases.

Age in its medico-legal relations. Development of the fœtus. Changes after birth. The teeth. Ossification and Union of Epiphyses.

Identity of the living. Identity of the dead. Sexual characteristics of the skeleton.

Modes of dying. Causes of sudden death.

Death from asphyxia. Hanging. Strangulation. Suffocation. Throttling. Drowning. Resuscitation from Drowning.

Mechanical injuries and wounds. Chemical, microscopical and spectroscopical examination of blood stains and other stains.

Death by burns and scalds. Death from lightning, electric current, heatstroke and cold. Starvation—its causation, symptoms and post-mortem appearances. Medico-legal questions relating to pregnancy, delivery and abortion, infanticide, Criminal offences, legitimacy.

Medico-legal aspects of insanity. Forms of insanity. Delusions, Illusions, Hallucinations, Criminal responsibility. Modes of placing lunatics under restraint. Medical certificates. Lunacy certificates. Examination of lunatics. Testamentary capacity. Feigned insanity. Placing habitual drunkards under restraint.

Toxicology. Diagnosis and general treatment of poisoning. Evidence of poisoning in the dead. Local effects produced by poisons, disease and post-mortem changes. Preservation of viscera for analysis. The detection of poisons, chemical and physiological tests.

Toxicology of the following poisons: Mineral Acids. Corrosive alkalies, carbolic acid, corrosive sublimate, oxalic acid, Salts of Copper, Lead and Antimony. Arsenic, Phosphorus, Opium, Cyanogen compounds, *alcohol*, Chloroform, Chloral Hydrate, Kerosine oil, Carbon Dioxide, Carbon Monoxide, Sulphuretted Hydrogen, Strychnine, Aconite, Datura, Belladonna. Cannabis Sativa, Nerium Odorum, Cocaine; Calotropis gigantea, Plumbago Zeylanica, snake venom. Poisonous Animal Food.

## HYGIENE.

(1) A course of lectures in Hygiene including demonstrations.

(2) Six practical Demonstrations.

(3) Practical instruction in Vaccination by any authorised Vaccinator.

Definition. General Hygiene. Special Hygiene. Public Health.

Impurities in Air. Effects of vitiated air generally. Ventilation. Natural and artificial Cubic space.

Impurities in water. Their source and effects. Diseases caused by impure water. Water-supply. Methods of purification and filtration.

Physical examination of waters as regards their potability.

Food. Functions of the four classes of; elementary principles of dieting. Average diets. Dietaries.

Different varieties of food.

Meat. Inspection of animals and of meat. Effects of unsound meat. Poultry and game. Fish. Cooking. Milk. Vegetable Foods. Wheat. Flour. Bread. Barley. Oat. Maize. Rice. Millet, etc. Leguminosae, etc. (Dal). Roots and Tubers (potatoes, carrot, etc). Herbaceous Vegetable (cabbage, cauliflower, etc.). Fruits. Prepared starches. Sugar. Concentrated foods.

Beverages and condiments. The Removal and Disposal of Sewage. Clothing.

The construction of the dwelling house. Sanitary inspection of a house.

Personal Hygiene in India. The causation and prevention of Endemic and Epidemic diseases.

The general principles of disinfection and the methods of carrying them into effect.

Disposal of the dead.

The powers and legal obligation of the medical practitioner under the Municipal Act; the correct registration of the cause of death.

11. The full marks for each subject and the minimum marks required for passing shall be as follows:—

	Written.	Oral.	Practical.	Total marks	Passing marks.	Passing marks in Practical.
Medicine ..	600	200	200	1,000	500	100
Surgery ..	600	200	200	1,000	500	100
Midwifery ..	500	100	200	800	400	100
Pathology ...	400	100	100	600	300	50
Medical Jurisprudence	400	100	100	600	240	40
Hygiene ...	200	100	...	300	150	...

12. In order to obtain Honours in any branch, a candidate must obtain half the marks allotted to each portion of the exa-

mination, written, oral and practical and two-thirds in the aggregate.

### BACHELOR OF ENGINEERING.\*

1. An examination of the Degree of Bachelor of Engineering shall be held annually at such time and place as the Syndicate shall determine, the approximate date to be notified in the Calendar.

2. The examination shall be held in the following branches:—

I. Civil Engineering;

II. Mechanical and Electrical Engineering;

III. Mining Engineering;

and the Diploma shall distinctly state in which branch the candidate has qualified.

3. Any undergraduate of the University may be admitted to this examination, provided he has prosecuted a regular course of study in a College affiliated to the standard of the B. E. Examination for two academical years after passing the Intermediate Examination in Engineering in class, laboratory and work-shop, in the particular branch in which he presents himself for examination.

4. A candidate shall not present himself for examination in any one year in more than one branch, but a Bachelor of Engineering who has graduated in one branch may present himself for examination in another branch, provided he has prosecuted a regular course of study in a College affiliated to the standard of the B.E. Examination for one academical year after passing the B.E. Examination, in class, laboratory and work-shop in the special subject of the branch in which he presents himself for examination. He shall be excused attendance and examination in subjects in which he has previously passed.

5. The B.E. Examination shall be divided into two sections as follows according to the limits laid down in paragraph 8:—

#### *Non-Professional Section.*

#### MATHEMATICS AND SCIENCE.

#### *Professional Section.*

#### ENGINEERING AND DESIGN.

A candidate may be permitted to present himself for the non-professional section at the end of the first-year

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\* Chapter LII of the Regulations, to remain in force up to 1927 in case of Non-Professional and up to 1928 in case of Professional Sections. For changes which will be given effect to, from 1928 and 1929, *vide* page 341.

of the B.E. Course and in the event of his failing in either of the groups Science (Physics, Geology and Mineralogy) or Mathematics he may be allowed to present himself again for examination in that group at the B.E. Examination. Such a candidate may obtain credit for the remaining group of the non-professional section but he shall not be allowed to pass in the professional section, unless he has previously qualified in all groups of the non-professional section.

6. Every candidate for admission to the non-professional section of the examination shall send to the Registrar his application with a certificate in the form prescribed by the Syndicate together with a fee of Rs. 20, at least fourteen days before the date fixed for the commencement of the examination.

A similar rule shall be observed in regard to the registration of a candidate's name for the Bachelor of Engineering Examination, in which case the fee shall amount to Rs. 40, irrespective of whether the candidate has previously passed or failed in the non-professional subject.

A candidate who fails to pass or to present himself for either examination shall not be entitled to a refund of the fee.

A candidate may be admitted to one or more subsequent examinations on payment of fee of like amounts to those above-noted.

7. Every candidate shall be examined in—

- (i) Mathematics.
- (ii) Science.
- (iii) Engineering.
- (iv) Drawing and Design.

The limits of the subjects shall be as follows:—

### NON-PROFESSIONAL SECTION.

#### MATHEMATICS.

##### *Integral Calculus and Differential Equations.*

(a) Integral Calculus, including the standard integrals, integrals, integration by substitution and by parts.

Application of the integral calculus to the determination of lengths of curves, plane, areas, volumes, centres of mass and moments of inertia in simple cases.

(b) Simple ordinary differential equations of the first and second orders.

##### *Mixed Mathematics.*

(a) Principle of virtual work. Analytical conditions of equilibrium. Solution of plane problems in statics by resolving and taking moments by the principle of virtual work and by graphical methods. Bending moments. The funicular polygon. The Catenary. Equilibrium of simple jointed frame-works.

(b) Units and dimensions.

Statistical equivalence of the externally impressed forces with

the effective forces in any system of bodies. The principles of linear and angular momentum. The principle of energy.

Gravitational potential energy; potential energy of a stretched elastic string and of a compressed spring.

Motion under gravity of a particle on a smooth vertical circle and on other simple curves.

Motion of a rigid body about a fixed axis.

Simple harmonic motion; the simple, conical and compound pendulum.

(c) Nature and general properties of fluid pressure.

Density and specific gravity of a homogeneous mixture.

Relations between pressure, density and force.

Thrusts on a plane area centre of pressure.

Resultant thrust on any immersed solid and any immersed surface, particularly in the case of a homogeneous liquid at rest under gravity.

Conditions for the equilibrium and for the stability of the equilibrium of a floating body.

Hydrostatic instruments. Determination of specific gravity. Properties of gases.

#### SCIENCE—GEOLOGY.

(For candidates in Civil Engineering and Mining Engineering.)

(a) *Astronomical Geology*.—Information obtained from meteorites and by the spectroscope. Probable history of the earth in its earliest stage of existence.

(b) *Geognosy*.—Probable internal condition; evidences of pressures and internal heat.

(c) *Petrography*.—Essential and accessory constituents. Classification of rocks. Characters and essential constituent of the more important Indian rocks.

(d) *Dynamical Geology*.—Volcanic phenomena. Theories of Volcanicity. Hot springs. Earthquakes. Secular upheaval and depression. Geological functions of air. Geological functions of water and ice. Chemical and mechanical actions, denudation and deposition; landslips. Peculiarities of Indian rivers. Lakes. Geological functions of plants and animals; coral islands.

(e) *Petrogenetic Geology*.—Origin of coal-beds. Origin of laterite. Origin of rock-cleavage. Ore deposits: origin and classification.

(f) *Architectonic Geology*.—Forms of bedding. Surface markings. Concretion. Overlap. Groups of Strata. Joints. Strike and dip; outcrop; monocline; syncline; anticline. Faults, origin and kinds. Intrusive phase of eruptivity; bosses, sheet, dykes, necks: interbedded phase of eruptivity: lavas, tuffs. Unconformability.

(g) *Palæontological Geology*.—Object. Conditions for the entombment of organic remains. Preservation of organic remains

in mineral masses; fossilization. A general account of the uses of fossils in geology.

(h) *Historical Geology*.—Leading principles of stratigraphy.

### INDIAN GEOLOGY.

#### I. *Pre-Cambrian History*.—

1. The Archæan Group. The ancient gneisses and schists. Dome gneiss anorthosites; the charnockite series; norites and pegmatites. The Dharwarian system.

2. The Purana group. Lower and Upper subdivisions. Outlines of the Kaddapah, Karnul and Vindhyan system. The Unfossiliferous Rocks of the Outer Himalayas.

#### II. *Cambrian and Post-Cambrian History*.—

3. The Dravidian Group. The Cambrians of the Salt Range. Outlines of the distribution of the Dravidian formations in the Himalayas and in Burma, the Vaikritas and Haimantas.

4. The Aryan Group. Outline of the Aryan History of the Salt Range and of the Himalayas; the Sirmurs and Siwaliks: subdivisions and petrology. Outlines of the history of Sind, Baluchistan, and Burma during tertiary times. The Aryan history of the Peninsula. Gondwana Land; evidences of the existence of an old Indo-African continent: Lower and Upper Gondwanas; stages; a more detailed account of the Raniganj, Jharria and Giridih coal-fields. The Cretaceous rocks of Madras and Assam. The Great Deccan Outburst. Laterite. Regur. The Indo-Gangetic Plain.

(i) *Field Geology*.—Geological surveying instruments. Tracing of boundaries and faults. Sections; how to find direction and amount of dip; Dalton's construction. Levelling; surface profile; datum level; bench marks; methods of geological levelling. Lithology; practical exercises in the identification of Indian rocks.

### MINERALOGY.

(For candidates in Civil Engineering and Mining Engineering.)

(a) Properties of crystals independent and of direction.

Density and specific gravity; methods of determining specific gravities; hydrostatic balance; Jolly's balance; pycnometers; flotation methods.

(b) *Physical Crystallography*.—Cleavage; fracture; hardness.

Optical properties of minerals. Kind and degree of lustre. Double refraction and polarisation. Nicol's prism. Classification of crystals according to their optical properties.

Examination of crystals in parallel and convergent polarized light; Pleochroism.

(c) *Geometrical Crystallography*.—Relation of physical properties to geometrical form. Crystalline form; faces. Planes and axes of reference; parameters; indices; symbols. Law of re-



lationality of indices. Miller's notation. Parametral form; its selection. Symmetry; planes and axes. Systems. Simple forms and combinations. Habit. Isomorphism and heteromorphism, Crystalline aggregates. Measurement of angles; contract and reflecting goniometers.

(d) Chemical Mineralogy—Outline of classification of minerals. Group tests.

(e) Descriptive Mineralogy—A general description of the following minerals:—

Elements—Graphite, diamond, gold.

Sulphides—Pyrite, galena, sphalerite, chalcopyrite.

Oxides—Corundum, hematite, magnetite, quartz, cassiterite, limonite, manganese ores, bauxite.

Oxysalts:—

(i) Carbonates—Calcite, dolomite, siderite, aragonite.

(ii) Sulphates—Anhydrite, gypsum.

(iii) Phosphates—Apatite.

(iv) Silicates—Tourmaline, olivine, garnet, muscovite, biotite, talc, serpentine, pyroxene amphibol, the feldspars.

Haloid salt—Halite, fluorite.

### APPLIED PHYSICS.

Thermodynamics of refrigeration. Technical Thermometry. Optical Instruments. Polarised Light. The Theory of illumination. Röntgen and Becquerel rays

The Laboratory course includes the following:—

Testing of spirit levels. Young's modulus by extensometer and by bending. Young's modulus of wires. Influence of temperature on Young's modulus. Modulus of rigidity by static and kinetic methods. Moments of inertia. Atwood's Machine. Kater's physical pendulum. Pyrometric measurements; thermal conductivity. Mechanical equivalent of heat. Photometric measurements; intensity of emission and illumination.

### PROFESSIONAL SECTION.

#### ENGINEERING—APPLIED MECHANICS.

(For all candidates.)

#### Definitions.

Elasticity:—Elasticity and rigidity. Stress, its nature and intensity. Tensile, compressive, and shearing stresses. Positive and negative senses of a stress. Stresses of uniform and variable intensities. Ultimate strength. Factor of safety.

#### Tension.

Simple tension:—Work done in stretching a rod. Thin pipes under internal fluid pressure. Strength of prismatic solids under tensile stress when the resultant of applied forces does

not coincide with the axis of the solid. Safe tensile co-efficients of various materials.

### *Compression.*

Classification of bars or pillars under compression:—Very short pillars, short pillars, long pillars, very long pillars. Methods of failure of these classes of pillars. Rondolet's, Hodgkinson's and Gordon's formulæ. Euler's formula. Fairbairn's formula for collapsing of tubes under fluid pressure. General remarks on the applicability of the above formulæ. Safe compressive co-efficients of materials usually subjected to a compressive stress: impact, pile driving.

### *Transverse Strain.*

Proof that the stress at each point varies as its distance from the neutral axis.

Determination of the position of the neutral axis.

Determination of the moment of resistance.

Calculation of moments of inertia of ordinary section used in engineering construction.

Flanged girders.—Approximate and accurate methods.

Proportion of I beams for equal strength.

Beams of uniform strength.

Bending moments and shearing forces (treated graphically and analytically).

Cantilever under single load at free end.

Cantilever under uniformity distributed load.

Cantilever under uniformly distributed load, and one or more detached loads.

Beams supported at the ends and loaded with detached loads at any point.

Beams supported at the ends and loaded uniformly.

Beams supported at the ends and loaded uniformly, and also with one or more detached loads.

Beams supported at the ends and loaded with a single detached moving load.

Beams supported at the ends supporting an uniformly distributed moving load of length less than the span.

Beams supported at the ends supporting an uniformly distributed moving load of length greater than the span.

Beams supported at the ends loaded at intermediate points.

Conversion of the detached loads into equivalent uniformly distributed load.

### *Statics of Structures.*

Framework loaded at joints.

Triangular frames:—Diagram of forces for a single triangular frame. Triangular trusses. Cranes and derricks. Sheer-legs and tripods. Effect of the tension of the chain in cranes.

Incomplete frames:—Preliminary ideas. Simple Trapezoi-

dal or queen post truss. General case of a funicular polygon under a vertical load. Suspension chains.

Compound frames:—Compound triangular frames for bridge trusses, Roof trusses in timber, Queen truss for large iron roofs. Diagram of force in general.

Framework girders:—Warren girders under various loads. N trusses, Bowstring girders.

Girders with redundant bars:—Lattice girders, flanged beams.

### *Deflection of Beams.*

Deflection due to the maximum bending moment. General equation of deflection curve. Elementary cases of deflection and slope. Beams propped in the middle. Stiffness of beams. Stiffest beam that can be cut from a circular log.

### *Shearing.*

Distinction between tangential stress and normal stress. Equality of tangential stress on planes at right angles. Tangential stress equivalent to a pair of equal and opposite normal stresses. Web of a beam of I section. Method of computing the intensity of the shearing stress at any point in a bent solid.

#### *Resistance of Prismatic Solids to Simple Torsion.*

Explanation of the phenomena of simple torsion.

A circular section, solid or hollow, most favourable form of prismatic solid for resistance to torsion.

Twisting moment. The limiting intensity of the resistance to torsion is that of the shearing stress.

Investigation of the resistance of a circular prism to torsion round its mean fibre.

The strength of axles subject to simple torsion. Values of the limiting intensity of working resistance to simple torsion for different materials.

Diameter of a shaft to transmit a given power.

### *Blockwork Structures.*

Stability at a plane joint. Stability of a series of blocks. Centres of pressure or resistance. Line polygon and curve of pressures. Line of resistance, or polygon of centres of pressures, moment of stability.

(For Civil Engineering Branch only.)

### *Retaining Walls.*

Theory of earth pressure. Angle of repose of different soils. Walls supporting a bank of earth with horizontal surface. Surcharged walls. Graphic methods of solution. Determination of the centre of pressure on any joint of a wall supporting a load of earth at its back. Maximum intensity of stress at any joint in a retaining wall. Minimum intensity of pressure. Tensile stress

at a joint. Effect of cohesion of mortar. Connection between maximum intensity of pressure on foundation course and power of resistance of earth foundation. Methods of equalising intensity of stress on foundation courses.

### *Masonry Arches.*

Definitions. Curve of pressures and line of resistance. Conditions of stability. Treatment of the weight of loads of different densities. Graphic process of determining the stability and resistance of any proposed arch by drawing the line of resistance. Depth of keystone.

### *Stability and Resistance of Abutments and piers.*

Graphic process of determining the position of resultant pressure on any joint of an abutment. Design of piers.

Stability of foundations of structures in masonry and brick-work.

## HYDRAULICS.

(For all candidates.)

### *General Principles.*

Velocity and volume of flow. Principle of continuity. Flow in a stream. Steady and varying motion of streams. Fluid acting on piston. Theorem of Bernoulli. Hydraulic head.

### *The flow of liquids through Orifices.*

Application of the theorem of Bernoulli. Velocity of flow due to given head. Co-efficient of velocity. Co-efficient of contraction. Co-efficient of discharge. Co-efficient of resistance. Connection between Co-efficient of velocity and resistance. Discharge from large rectangular orifices. Borda's mouth-piece. Co-efficient of contraction of Board's mouth-piece obtained theoretically. Incomplete contraction. Cylindrical and conical mouth-pieces. Flow-over notches. Triangular notches. Velocity of approach. Application of results to measurement of flow in streams. Francis' formula. Discharge of measured quantities of water for irrigation purposes. Italian and Spanish modules. Other forms of apparatus answering the same purpose. Discharge under varying head. Jet pump. Separating weirs.

### *The flow of Liquids in Pipes.*

Law of friction between liquids and surfaces. Froude's and Unwin's experiments. Loss of head due to friction in pipes.

Hydraulic mean depth. Variation of co-efficient with velocity and diameter. Darcy's Formula. Hydraulic gradient. Ordinary computations of size of pipes and volume of discharge. Loss of head due to bends, elbows, enlargements, etc.

*Impulse and Reaction of water.*

Pressure of a jet on a plane surface, fixed or moving. Energy communicated to the moving surface and efficiency of jet. Velocity of surface for maximum efficiency. Resultant pressure on curved surface, direct impulse and reaction. Condition to avoid loss by shock when jet is received. Condition for least loss of kinetic energy when jet is discharged.

(For Civil Engineering Branch only.)

*Movements of Water in Canals and Rivers.*

Mean velocity corresponding to given gradient. Variation of the co-efficient. Velocity at different parts of the section of the stream. Mean velocity in terms of surface and bottom velocity. Ratio of mean to maximum velocity. Forms of section of channel, circular, trapezoidal, egg-profile. Most economical section of canal with given side-slopes. Form of section for a constant velocity with varying discharge.

## IRRIGATION AND SANITARY ENGINEERING.

(For candidates in Civil Engineering.)

Well irrigation, Canal irrigation, Inundation canals, Permanent canals, Reservoirs, Distribution of water, tank irrigation, River inundation and river improvement. Municipal water-supply. Sources of water. Quality and Quantity of water, selecting sample for analysis and bacteriological examination. Collection of water—from springs, from wells, from tanks, from rivers. Purification of water. Raising and distribution of water. Inter-mittent and constant supply.

Drainage and sewerage, surfaces, sewers, flushing, house-drainage, urinals and latrines, disposal of sewage.

## ROADS AND RAILWAYS.

(For candidates in Civil Engineering.)

Different classes of roads. Survey, construction and maintenance of metalled and unmetalled roads. Hill roads, bridges and culverts.

Survey, Location and Preparation of Railway Project. Construction of Formation and Permanent-way. Tunnels and Bridges. Simple Railway appliances. Rolling stock.

## THE PRINCIPLES OF ARCHITECTURAL DESIGN.

(For the Civil Engineering Course only.)

Rise and development of building in pre-classic times. Influences on subsequent work.

*Greek Architecture.*—The orders, application, materials and methods of construction.

*Roman Architecture.*—The orders employed, use in building, the arch, vault and dome. Architectural perspective. Design. The styles arising from the Roman.

*Byzantine Architecture:* materials, construction and decoration; Romanesque work in Europe, Saracenic building in the East.

*Gothic Architecture,* its rise and development, vaulting  
*Renaissance Architecture.* Design.

## MECHANICAL ENGINEERING.

(For all Branches.)

*The following course will be taken in a simple manner for the Civil Engineering and Mining Branches; candidates in Mechanical and Electrical Engineering will be expected to possess a more detailed and special knowledge:—*

Testing of material, Mechanical testing of cement, lime, brick, stone, timber, metals.

*Boilers.*—Heating value of fuels and mechanical equivalent; conditions for economical combustion.

Various types of boiler; their construction and strength. Evaporative power. Management. Fittings. Piping. Feed pumps. Economisers. Superheaters. Boiler trials.

*Steam Engine.*—Expansion of steam. Steam consumption. Condensation in cylinder. Steam jackets. The Indicator and its uses. Valves and valve gearing. Reciprocating and Turbine Engines. Compounding. Governing. Condensers. Engine Tests.

*Internal Combustion Engines.*—Fuels used. Principles of action and construction of typical Engines. Ignition. Governing. Starting. Working. Testing.

### *Hydraulic and Pneumatic Engines.*

(Details of Machinery.)

Bolts. Nuts. Keys and Cotters.—Journals. Crank pins, pivot and collar. Bearings. Axles. Shafting and couplings. Gearing.

### *Theory of Machines.*

(For candidates in Mechanical and Electrical Engineering.)

Types of Mechanism. Virtual centres. Velocity and acceleration diagrams. Gearing. Valve Gearing. Friction. Crank effort. Inertia of moving parts. Balancing. Governors. Fly-wheels. Dynamometers.

The course in Mechanical Engineering will be accompanied by a course of Practical work in the Prime mover, Hydraulic and Mechanical Testing Laboratories.

### ELECTRICAL ENGINEERING.

(For all Branches.)

*The following course will be taken in a simple manner for the Civil Engineering and Mining Branches:—*

#### *Theoretical.*

The Principles of telegraphy and telephony. Electric bells and indicators, Lightning conductors. Dynamo-Electric machinery, direct and alternate, monophase and polyphase. Types of armatures and field magnets. Reaction of armature and field. Motors; efficiency of motors and generators. Causes of loss of electric energy. Comparison with other systems of transmission of energy. Transformers. Accumulators. Electric Lighting system. Electric welding. Electric deposition of metals

#### *Practical.*

Magnetic elements. Tracing of B. H. curves. Exploration of magnetic fields. Characteristic and magnetization curves of dynamos. Efficiency of dynamos and motors. Measurement of co-efficients of self-induction. Fault testing in electrical circuits. Testing lightning conductors

*Candidates in Mechanical and Electrical Engineering will be expected to possess a more detailed and special professional knowledge of the syllabus laid down for Civil and Mining Branches.*

(For the Electrical and Mechanical Branch only.)

The principles, practice and the design of electric lighting installations, and the principles of the *art* of illumination. Power distribution both A.C. and D.C. Long distance transmission systems, transmission line calculations. Traction. Electric Railways, Electric signalling. Dynamo, alternator and transformer design. Accumulators. Switchboard instruments, direct, single-phase and polyphase. High tension system. Methods of testing used by Engineers. Electrical instrument testing.

### MINING.

(For candidates in Mining Engineering only.)

#### PART I.

Geology applied to mining.

Boring by hand and power machines.

Sinking and lining shafts; various methods employed in special cases.

Systems of haulage, underground and aboveground; serial ropeways.

Hoisting; head gear; ropes; safety appliances.

Mining legislation.

Methods of working coal; shaft-pillars, preliminary work and various methods of working the seams. Special reference to thick coal working, as practised in England and different parts of the world.

Shot-firing; coal-cutting by machinery.

Surface subsidence and under-sea working.

Timbering and other supports.

Coal-mine plans and sections; connecting surface and underground surveys.

Prospecting for and methods of working mineral veins.

Alluvial mining and open workings.

Hydraulic mining; dredging for gold; ore-beds and deep-leads; overhand and underhand stopping. Hand and power; drilling; blasting; timbering.

Metal mine plans.

## PART II.

Descriptive mineralogy; physical properties of minerals; description of various ores and fuels; methods of determination.

Prospecting operations.

Drainage of mines; adit levels; pumping machinery; dams; boring against old workings.

Ventilation of mines; natural and artificial ventilation; splitting and regulating air currents; types of fans; water-gauge and anemometer.

Power application in a mine; discussion of relative merits of steam, water, compressed air, electricity, and oil as sources of applied power.

Description of gases found in coal mines; colliery explosions; safety lamps; instruments for detecting firedamp; treatment of men overcome by foul air.

Arrangements of surface works at a colliery; sorting and screening coals, coalwashing; briquette making; coking; and bye-products.

Surface work of metal mines. Sorting, crushing, sizing, and concentration of various ores. Modern ore-dressing machinery, and slime tables.

Special reference to treatment of gold, silver, copper, lead and zinc.

Cyanide and chlorine treatment of slimes.



## DRAWING AND DESIGN.

*The written test for candidates in Civil Engineering* will be confined to the preparation of detailed drawings from notes and sketches, as applied to Civil Engineering and Architecture: *for candidates in Mechanical, Electrical and Mining Engineering* it will be confined to the preparation of detailed drainage and designs from notes and sketches, as applied to machinery and structures relating to these branches.

*Practical Test (for all candidates).*—Attested drawings and Designs for Engineering Works and Buildings will be submitted for examination. Marks will be allotted for field work and calculations.

8. The subjects and marks shall be distributed as follows:—

## CIVIL ENGINEERING.

Non-Professional Section, to be taken at the end of the first-year.

## MATHEMATICS.

Theories	...	...	...	250	
Application	...	...	...	350	
				<hr/>	600

## SCIENCE.

Geology and Mineralogy	...	...	...	300	
Applied Physics (paper)	...	...	...	300	
Ditto (Practical)	...	...	...	200	
				<hr/>	800

Total Non-Professional Section	...	1,400
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*Professional Section.*

## GROUP I.

Roads and Railways	...	...	...	400	
Irrigation and Sanitary Engineering	...	...	...	400	
Applied Mechanics	...	...	...	400	
Hydraulics	...	...	...	400	
				<hr/>	1,600

## GROUP II.

Mechanical Engineering (paper)	...	...	...	400	
Ditto. Laboratory work	...	...	...	200	
Electrical Engineering (paper)	...	...	...	400	
Ditto. Laboratory work	...	...	...	200	
				<hr/>	1,200

## GROUP III.

Attested designs for Engineering Works and				
Buildings	...	...	...	500
Practical Drawing	...	...	...	300
The Principles of Architectural Design	...	...	...	200
				<hr/>
				1,000
Total Professional Section	...			3,800

## MINING.

Non-Professional Section, to be taken at the end of the first-year.

## MATHEMATICS.

Theories	...	...	...	250
Application	...	...	...	350
				<hr/>
				600

## SCIENCE.

Geology and Mineralogy	...	u	...	300
Applied Physics (paper)	...		.....	300
Ditto (Practical)	...		...	200
				<hr/>
				800
Total Non-Professional Section	...			<hr/>
				1,400

*Professional Section.*

## GROUP I.

Applied Mechanics and Hydraulics	...	...	...	400
Mining I	...	...	...	400
Mining II	...	...	...	400
				<hr/>
				1,200

## GROUP II.

Mechanical Engineering (paper)	...	...	...	400
Ditto. Laboratory work	...	...	...	200
Electrical Engineering (paper)	...	...	...	400
Ditto. Laboratory work	...	...	...	200
				<hr/>
				1,200

## GROUP III.

Attested Designs for Engineering Works and Buildings	...	...	...	500	
Practical Drawing	...	...	...	800	
				<hr/>	800
Total Professional Section	...				3,200

## ELECTRICAL AND MECHANICAL ENGINEERING.

Non-Professional Section, which may be taken at the end of the first-year.

## MATHEMATICS.

Theories	...	...	...	250	
Application	...	...	...	350	
				<hr/>	600

## SCIENCE.

Applied Physics (paper)	...	...	...	300	
Ditto (Practical)	...	...	...	200	
				<hr/>	500
Total Non-Professional Section	...				<hr/> 1,100

*Professional Section.*

## GROUP I.

Applied Mechanics and Hydraulics	...	...	...	400	
Electrical Engineering (common paper)	...	...	...	400	
Ditto. (advanced)	...	...	...	400	
Ditto. (Practical work)	...	...	...	200	
				<hr/>	1,400

## GROUP II.

Mechanical Engineering (common paper)	...	...	...	400	
Ditto. (advanced)	...	...	...	400	
Theory of Machine	...	...	...	400	
Mechanical Engineering (practical work)	...	...	...	200	
				<hr/>	1,400

## GROUP III.

Attested Designs for Engineering workshops	...	500	
Practical Drawing	... ..	300	800
			<hr/>
Total Profession Section	...	8,600	<hr/>

9. The order of merit on passing the Bachelor of Engineering Examination shall be determined by the marks obtained in the professional section only.

10. As soon as possible after the Bachelor of Engineering Examination, the Syndicate shall publish lists in order of merit of those who have passed the Bachelor of Engineering Examination in each branch under the condition laid down in rule 5. They shall also publish lists in alphabetical order of those who have qualified in either group of the non-professional section, showing also the group in which he may yet have to qualify.

11. The pass marks for the B. E. Examination shall be one-third in each group of subjects and half of the aggregate for a second class. Two-thirds of the marks in the professional section shall be required for a first class. The candidate who is placed first in the first class in each branch shall receive a gold medal and a prize of books to the value of Rs. 200.

12. Any candidate who has failed in one group of subjects only, and by not more than 5 per cent. of the full marks in that group of subjects and has shown merit by gaining 60 per cent. or more in the aggregate of the marks of the examination shall be allowed to pass.

13. If the Examiners are of opinion that in the case of any candidate not covered by the preceding Regulation, consideration ought to be allowed by reason of his high proficiency in a particular subject or in the aggregate, they shall report the case to the Syndicate, and the Syndicate may pass such candidate.

## APPENDIX E.

\* Syllabus of Chemistry (both theoretical and practical) for the Intermediate Examinations in Arts and Science, to come into force with effect from the Examinations of 1930:—

States of aggregation of matter, effect of pressure and temperature on volumes of gases, changes of state, saturation pressure, indestructibility of matter and of energy, chemical and physical changes, enumeration of changes attending chemical reaction, elements and compounds, balance, weights and measures, common laboratory processes—mixture, solution, crystallisation, distillation, evaporation, precipitation, filtration, decantation, desiccation, combination by weight and volume, atoms and molecules, Avogadro's law, simple examples of determination of atomic weights, laws of chemical combination, the atom and atomic theory, general principles of periodic classification, terminology and nomenclature, symbols, formulae, equations, decomposition, dissociation, combustion, oxidation, reduction, calculation of formul from percentage composition, calculations relating to weight and volume, Faraday's laws of electrolysis, electro-chemical equivalents, valency, acids, bases and salts, neutralisation.

*Study of the following:*—Hydrogen, oxygen, catalytic agent, ozone, allotropic modifications of elements, water, hydrogen peroxide, nitrogen, air, ammonia, oxides of nitrogen, nitric acid, sulphur, polymorphs of elements, sulphuretted hydrogen, sulphur dioxide, sulphur trioxide, sulphuric acid, carbon, carbon monoxide, carbon dioxide, coal and its chief products, coal gas, marsh gas, ethylene, acetylene, structure of flame, fluorine, hydrofluoric acid, chlorine, hydrochloric acid, hypochlorous acid, bleaching powder, chlorates of potassium and calcium, bromine, hydrobromic acid, iodine, hydriodic acid, phosphorus, phosphoretted hydrogen, phosphorus trioxide, phosphorus pentoxide, orthophosphoric acid and orthophosphate, silicon, silica, dialysis, composition of glass, borax, sodium, potassium, calcium, magnesium, zinc, mercury, copper, silver, aluminium, lead, tin, iron—omitting metallurgical details—and their oxides, hydroxides, chlorides, nitrates, sulphates and carbonates.

\* The above Syllabus to be substituted for the existing Syllabus under the Sub-head "Chemistry", in Sec. 12, Chapter XXXV, which is to remain in force up to the Examinations of 1929 only.

*Practical Course.*

Fitting up of simple apparatus, *e.g.*, a wash-bottle.

Performance of experiments involving solution, filtration, distillation and crystallisation.

Determination of the water of crystallisation of hydrated salts.

Preparation and study of the principal properties of hydrogen and oxygen.

Performance of experiments illustrating the chemistry of fire, air and water.

Performance of experiments involving oxidation and reduction. Simple blow-pipe analysis.

Determination of the equivalent of zinc and hydrogen.

Preparation and study of the principal properties of sulphur dioxide, nitric acid, nitric oxide, ammonia, carbon dioxide, hydrochloric acid, chlorine and sulphuretted hydrogen.

Qualitative analysis of simple substances containing not more than one acid and one basic radical included in the following list:—ammonium, sodium, potassium, calcium, magnesium, zinc, mercury, copper, silver, aluminium, lead, tin, iron, and their oxides and hydroxides, chlorides, nitrates, sulphides, sulphates and carbonates.

Use of the chemical balance.

\* Syllabus of Chemistry (both theoretical and practical) for the B.A. and B.Sc. (pass) Examinations to come into force with effect from the Examinations or 1930:—

In addition to a fuller treatment of the subjects prescribed for the I.A. and I.Sc. course, the following:—

Periodic classification of elements, atomic number, isotopes, kinetic theory of gases, diffusion of gases, liquefaction of gases, laws of mass action, catalysis, osmotic pressure, the theory of solution, colloids, elements of thermo-chemistry, methods of determination of equivalent, atomic and molecular weights, basicity of acids, acidity of bases, allotropy, isomerism, polymerism, compound radicals and homology, velocity of chemical action, chemical equilibrium, theory of electrolytic dissociation.

Preparation of properties of following elements and their chief compounds:—Oxygen, hydrogen, nitrogen, argon, fluorine, chlorine, bromine, iodine, sulphur, boron, carbon, silicon.

\* The above Syllabus to be substituted for the existing Syllabus under Sub-head "Chemistry," in Sec. 10, Chapter XXXVI, which is to remain in force up to the Examinations of 1929 only.

phosphorus, arsenic, lithium, sodium, potassium, ammonium, calcium, strontium, barium, magnesium, zinc, cadmium, mercury, copper, silver, gold, aluminium, manganese, iron, tin, lead, antimony, bismuth, nickel, cobalt, chromium and the following compounds of carbon:—

Methane, ethane, ethylene, acetylene, their simple derivatives, namely, haloid derivatives, aldehydes, ketones, alcohols, monobasic acids, acid chlorides, acid anhydrides, acid amides, nitrites, ethers, esters, primary, secondary and tertiary amines, glycol, lactic acid, oxalic acid, malonic acid and succinic acid, tartaric acid, glycerol, citric acid; fats, soaps and candles; hydrolysis, saponification; dextrose, laevulose, cane-sugar, starch, cellulose; cyanogen, hydrocyanic acid, ferro and ferricyanides; coal tar and its distillation; benzene, toluene, xylene, orientation, monochlorobenzene, mono-nitrobenzene, benzene sulphonic acid and phenol, aniline, diazotisation, benzyl chloride, benzal chloride, benzotrichloride, benzyl alcohol, benzaldehyde, benzoic acid, benzoyl chloride salicylic acid.

*Practical*—Preparation of salts in the pure state. Qualitative analysis of inorganic mixtures containing not more than two radicals from the following list:—Silver, lead, mercury, copper, bismuth, cadmium, tin, arsenic, antimony, iron, manganese, aluminium, chromium, zinc, cobalt, nickel, calcium, strontium, barium, magnesium, potassium, sodium, ammonium and their oxides, hydroxides chlorides, bromides, iodides, sulphides, sulphites, sulphates, chromates, carbonates, phosphates, nitrates, nitrites, borates, silicates, cyanides and thiocyanates. Alkalimetry, acidimetry, oxidation and reduction methods of volumetric analysis, gravimetric estimation of copper, silver, iron and sulphuric acid, determination of chemical equivalent. Identification of the following organic compounds given singly:—

Methyl alcohol, ethyl alcohol, acetone, chloroform, formic, acetic, oxalic and tartaric acids, glycerol, citric acid, urea, dextrose, canesugar, starch, benzene, benzoic acid, aniline, phenol, salicylic acid."

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